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By W. H. C. Romanis, M.B., M.Chir. Camb., F.R.C.S. Eng.

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During the last few years the development of the operation of lobectomy has been largely responsible for the increasing employment and popularity of surgery as an important method of treatment in bronchiectasis. Indeed, excision of the diseased area of lung is the only measure that at the present time holds any chance of permanent alleviation in established cases, and it is gradually but steadily replacing all such previous methods as cautery excision and collapse procedures.

Indications

The possibilities of lobectomy are, however, limited by the extent of the disease and the ability of the patient to withstand a major operation. In practice, the first factor in the selection of suitable cases for this operation is to limit it to those in whom the disease is localised and in whom Lipiodol filling of the bronchial tree shows that the dilatations are confined to one lobe, nearly always the lower lobe. Unfortunately such cases are at present comparatively rare, though there is hope that with increasingly accurate diagnosis and earlier resort to surgery they may become commoner. This strict localisation is not an absolute criterion, for on a few occasions the whole of one lung, or the lower lobes of both lungs, have been successfully removed, but the instances in which this is possible are not sufficiently common to justify their being regarded as routine procedures. Another criterion which must be rigidly applied in the selection of cases is a consideration of the patient's general condition as shown by the amount of general toxicity and sepsis; for the presence of this toxæmia to any considerable extent greatly increases the risk of the operation. The removal of a portion of the lung may be effected by a one- or two-stage operation. Our own preference is distinctly for the single-stage operation, and the present series of cases is based entirely upon this type. Several series of figures have been published recently, notably by Tudor Edwards and Price Thomas, and by Nelson and Roberts, illustrating the excellent results and low mortality that can be obtained by this one-stage operation, but on the other hand it must be admitted that the results recorded by Sauerbruch and John Alexander, for example, offer a certain amount of support for the delayed, or two-stage, operation.

The second and equally important factor in selecting those cases as suitable for lobectomy, as mentioned above, lies in the patient's general condition. Here wide variations will be encountered, varying from patients—usually young ones—who exhibit little or no signs of toxicity or sepsis, and who look fit and are able to lead comparatively active lives, to those who obviously are profoundly toxæmic, with clubbing of the fingers (an important point), fœtor, pale muddy complexion, weakness, and emaciation: it is important to draw a very definite line of distinction between these two classes. Roughly speaking, the degree of toughness and adherence of the lobe, and therefore the mechanical difficulties of the operation to remove it, correspond with the degree of toxicity of the patient, so that in general a toxic patient will also be faced with a more severe and difficult operation.

The first class, those patients who evidence no sign of toxicity and whose disease has been recognised almost more on radiological rather than clinical evidence, comes to operation facing a risk that is definitely lower than that of many major abdominal operations, for example gastrectomy. The question when and whether operation is justifiable in these early and sometimes almost symptomless cases is not easy to answer, since the period between an early original diagnosis and the onset of the definite classical symptoms is a variable factor. It is, however, more than probable that all cases of bronchiectasis, however slight, are slowly progressive, and that sooner or later the patient's life will be ended by a lingering and unpleasant process after a prolonged period of suffering both for himself and his relations. If every case that is diagnosed were to be submitted to immediate operation it would be possible to obtain a very low mortality-rate, but since many years may elapse before a child develops the almost inevitable disabling features of the disease, we feel that such cases can certainly be treated medically and conservatively and observed for some time until the definite downward progress and the suggestion of toxic symptoms call for the consideration of surgery. We look upon a figure of 17 per cent. as expressing the operative mortality under these latter conditions.

The second class of the toxic patients presents a different problem, and the extreme instances of this will be patients suffering grossly from the effects of toxic absorption, and usually with much more advanced disease in the lung. This class will present the typical advanced clinical features of the disease—clubbing, pallor, breathlessness, and myocarditis, in addition to the cough, abundant sputum, and lung features, and are often too ill to withstand even a minor surgical intervention. As an intermediate group there is a large class of patients who give a history of progressive ill health, and exhibit definite signs of toxicity, with fœtid sputum, cyanosis, clubbing of the fingers, recurrent hæmoptysis, dyspnœa, loss of weight, &c., but who are obviously fairly fit. In these advanced cases lobectomy may give excellent results, but the operation is going to be more hazardous and difficult, and we regard its risks in this advanced state of the disease as being about 35 or 40 per cent. It will appear, moreover, that the general toxæmia of the patient is invariably greater than a clinical estimation would give. In this connexion during anæsthesia before the operation we have several times noticed a sign which we regard as of grave significance. This is the onset of a toxic cyanosis even in the presence of unobstructed air-passages and a plentiful oxygen supply. On more than one occasion we have returned a patient to bed without starting the operation when this phenomenon has occurred during early anæsthesia.

The surgeon who exercises a fair judgment and undertakes a certain number of operations for patients in both these classes will probably have to face a mortality of about 15–20 per cent.

Dangers

The risks encountered in this operation are not necessarily only those of the more ordinary complications, such as shock, emphysema, spreading pneumonia, bronchial fistula, and atelectasis, but are also of a more general character. For massive necrosis and spreading gangrene of the chest wall and pleura, without any attempt at localisation, have been seen on several occasions, and this seems to be more due to lack of resistance on the patient's part than to the virulence of the infection. No form of treatment has been of any avail, and the patient has slowly died several weeks after the operation.

Much can be done to diminish the incidence of the more local complications mentioned above, especially in the direction of diminishing the sputum before the operation. Thus postural drainage, bronchoscopy, and suction, both some time and immediately before the operation, injection of arsenical preparations, and carefully selected methods of anæsthesia, are all of the greatest value.

Results

Our figures for single-stage lobectomy in bronchiectasis are briefly tabulated in the following Table.

Results of Single-stage Lobectomy

—	Class I. Good risks.	Class II. Bad risks.	Total.	Symptom-free.	Improved.*	Died.
Children (under 15)	13 with 2 deaths.	6 with 2 deaths.	19 with 4 deaths.	11	4	4
Adults.	12 with 2 deaths.	15 with 5 deaths.	27 with 7 deaths.	12	8	7
Total ..	25 with 4 deaths.	21 with 7 deaths.	46 with 11 deaths.	23	12	11

* But suffering from further bronchiectasis in other lobes.

It will be seen therefore that in presenting any figures of the results of lobectomy a distinction must be made between the type of risk that is undertaken according to the class of patient. In Class I. of good risks can be included the very early cases, those who are just beginning to lose health, those subject to occasional recurrent attacks of pneumonia, and those in which the sputum is only just becoming offensive. In Class II., the bad risks, fall those with evident toxæmia, with cyanosis and shortness of breath, abundant sputum, and advanced physical signs. Nevertheless, many patients in the latter class are prepared to face almost any risk because of the unpleasantness of their condition both to themselves and other people. It should be remembered that a shrewd idea of whether the operation is likely to prove difficult or not can be obtained by taking a radiograph after an artificial pneumothorax has been performed. This may show the presence or absence of adhesions. It should also be remembered that when there has been a previous empyema the operation is almost always difficult from adhesions.

It is noticeable that children stand the operation well compared with adults in contradistinction to abdominal operations. They are more liable to shock if the operation is unduly prolonged, but in most cases 30–40 mins. is an adequate time allowance. The dead space in the chest left by the removal of the lobe fills in rapidly in young children without the occasional fluctuations in upper lobe expansion that are sometimes seen in adults. The end-results are also relatively more satisfactory, probably because operation is undertaken earlier and the powers of compensation are greater. The failure to cure some adult cases is due to the fact that disease already exists unrecognised at the time of lobectomy beyond the confines of the lobe removed, and most of the 11 cases grouped under the heading of "improved" in the Table are examples of this. The early results were satisfactory, but recurrence of symptoms and X ray investigation has proved the existence of further bronchiectatic dilatations. The present state of these patients varies, some being able to lead a fairly normal existence, whereas others are incapacitated and are either beyond the stage of surgery or have refused further operation. Bronchoscopic aspiration is of considerable assistance in keeping the more unpleasant features of the disease under control.

Prognosis

With regard to the future of the patients who have had a lobectomy performed and are at present free from symptoms, a word of warning should be sounded. When the disease is completely eradicated, in most cases complete and rapid recovery follows, so that the immediate results may be said to be most satisfactory. We have not had much chance yet, however, of following these patients for six, eight, ten, or more years, and it must be remembered that the mere fact that they have had a portion of lung tissue removed causes the remaining parts of the lung to expand, and therefore to become liable to emphysema. This very process may in the future tend to make further bronchiectasis develop. At present we simply do not know.

Alternative Methods

Whereas lobectomy is at present regarded as the best treatment for bronchiectasis there are, however, other procedures which can be employed with advantage to the patient when circumstances forbid deliberate excision. *Collapse therapy*—phrenicectomy and thoracoplasty—has sometimes a palliative effect but its results are rarely of long duration. *Cautery pneumonectomy* across the adherent pleural cavity establishes drainage of the affected bronchi at the same time as areas of diseased lung are destroyed. The treatment is a prolonged one, and there is the risk of a permanent bronchial fistula, though in 5 cases that we have done the fistulæ closed spontaneously. There is also the danger of injury to the pericardium if the bronchi lying close to the mediastinum require opening, while at times severe hæmorrhages have occurred either during or after the operation. *Simple pneumonotomy* has a place in the palliative treatment of severe cases beyond the range of lobectomy. A small opening is made in the chest wall, and if the pleura is adherent the lung is torn across with the finger usually without much hæmorrhage. We have practised this on both sides on two occasions with almost complete reduction of the sputum output. The results were gratifying but cannot be looked on as permanent.

Lobectomy in other Diseases

The value of lobectomy in cases other than bronchiectasis has not been so advantageously shown. Most cases of carcinoma of the lung that have come to thoracotomy have been found to be inoperable owing to metastasis or infiltration of the growth into the mediastinum or chest wall. We have, however, performed lobectomy in 10 such cases, but in some of these it was necessary to resect portions of the chest wall in addition, and of these latter there are none who have survived for more than a few

months. Our experience with lobectomy in cases of chronic lung abscess has not been satisfactory. The operation is only attempted when more simple methods have been deemed impracticable, and in many of these the presence of abscesses elsewhere in the body has been proved at autopsy showing that success could only have been temporary.

Points in Technique

The main principles in the technique of single-stage lobectomy are more or less standardised, but there are variations in detail. The chief points that we emphasise are the value of preliminary postural drainage and bronchoscopic treatment in an endeavour to relieve the patient of as much of his retained products as possible. In children a bronchoscope or a suction tube is passed under the anæsthetic before the actual operation is started, and mucus and pus is aspirated from the diseased lobe. One or two special clamps of our own design are used to secure the hilum of the lobe before the actual removal and transfixion sutures are placed proximal to the clamp. In this way the chance of leaving a piece of diseased tissue containing a bronchial stump is avoided, and in children it is difficult to make the lobectomy complete otherwise. A small closed intercostal drainage-tube is inserted as a routine, and after the first 24 or 48 hours suction is applied to encourage expansion of the upper lobe. The tube is removed as soon as blood-stained serum has ceased draining unless the fluid has become turbid, suggesting the onset of an empyema.

DETERMINING THE INFECTIVITY OF BACTERIA FOR THEIR HOST

WITH SPECIAL REFERENCE TO THE PATHOGEN-SELECTIVE CULTURE

By Myer Solis-Cohen, M.D.

The mere presence of a microbe on a mucous membrane, or on the secretion from it, does not indicate infection; nor in chronic or focal infection is the predominance of a germ evidence of any relationship between it and such infection. Of 384 cultures in chronic and focal infections made in glucose brain broth by Boerner and M. Solis-Cohen, in 169 (44 per cent.) the predominating organism was not pathogenic for its host.

It is necessary in an infection to determine which of the bacteria present are of ætiological significance and which may be ignored as not being pathogenic for their host, however pathogenic they may be for other human beings or for animals.

The various serological tests are considered unreliable for determining infectivity. According to Topley and Wilson, the antibody titre of a particular sample of serum, as measured in vitro, is not highly correlated with its power to protect in vivo; the lack of correspondence between the presence of precipitins and agglutinins on the one hand, and the clearing capacity on the other, is obvious; and resistance to a particular bacterium has frequently been associated with entire absence of demonstrable complement-fixing bodies. Intracutaneous testing gives no information concerning specific pathogenicity. Nor is Rosenow's theory of selective affinity regarded as valid. Insufficient studies have been made with cataphoresis to permit of its evaluation.

The fact that an animal is often able to remove from its blood stream bacteria which have gained access to it has suggested to many investigators the possibility that the presence or absence in an animal of susceptibility to, and resistance against, a particular germ may be determined, and possibly measured, by testing the bactericidal power of its blood against that organism. Amoss, however, believes that tests to show the bactericidal power of the blood have little clinical application, because the blood of normal persons contains small amounts of bacteriolysins for many bacteria; but Fleming has demonstrated that these do not include streptococci, pneumococci, and staphylococci. In the presence, moreover, of an active infection organisms are able to multiply in human blood, which normally kills them very easily when such infection is absent, as Fothergill and J. Wright and Hare have observed.

METHODS EMPLOYED FOR DETERMINING AND MEASURING THE BACTERICIDAL POWER OF THE BLOOD

During the past fifty years many different methods have been devised for determining and measuring the bactericidal power of the blood, employing blood-serum, the cellular elements of the blood, defibrinated whole blood, whole blood rendered uncoagulable by the addition of sodium citrate or heparin, fresh whole coagulable blood, and serum-leucocyte mixtures.

Tests devised chiefly for determining or measuring the virulence of certain germs or strains, or the susceptibility or resistance of certain species of animals, include those of E. Bumm (1885), Fodor (1887), Nuttall (1888), Nissen (1889), Buchner (1890), Schottmüller (1903), Weil (1907), Fromme (1908), Gordan (1924), Scaltritti (1925), and Skajaa (1927). Many other tests have been employed for determining in the individual case the presence, or the degree of infectivity for its host, of a microbe present, such as those devised by Greco (1896), A. E. Wright (1900, 1914, 1915, 1923, and 1931), Weaver and Reudiger (1903), Rosenow (1906), Hussy (1916), Heist, S. Solis-Cohen, and M. Solis-Cohen (1918), M. Solis-Cohen and Heist (1921), Ruge (1923), Philipp (1923), Ruge and Philipp (1923), Robertson and Sia (1924), Lucena (1926), Todd (1927), Bull and Tao (1927), H. D. Wright (1927), Courmont and Gardere (1929), Thalhimer and Colwell (1929), Mackie and Finkelstein (1931), and Boerner and Mudd (1935).

COMPARATIVE BACTERICIDAL VALUES OF THE DIFFERENT TYPES OF BLOOD EMPLOYED

Considerable differences of opinion exist as to the best type of blood for bactericidal tests. One reason for this may be the fact that in many instances different investigators have experimented with different species and strains of bacteria and different species of animals, using different methods and employing different types of blood.

Blood-serum has been found lacking in bactericidal power by Andrei, Boys and Gunn, Carminati, Douglass, Heist, S. Solis-Cohen, and M. Solis-Cohen, Kyes, Maitland, Matsunami, Matsunami and Kolmer, Reudiger, Rosenow, Schiaparelli, Smiley, Strouse, Weaver and Reudiger, A. E. Wright, A. E. Wright, Morgan, Colebrook, and Dodgson, and by the great number of immunologists who believe the leucocytes are concerned in the destruction of bacteria by the blood. On the other hand, those employing serum for testing bactericidal power present some evidence that it is suitable for this purpose. In their earlier work A. E. Wright (1915) and A. E. Wright, Fleming, and Colebrook (1918) used blood-serum with apparent success. In Mackie and Finkelstein's experience the bactericidal power of "whole blood" frequently was not superior to serum but in fact was often less active. Mackie, Finkelstein, and Van Rooyen, however, found that

"whole" blood or serum-leucocyte mixtures may exert a definite bactericidal effect even when the serum alone is quite inactive in this respect. A. E. Wright, Colebrook, and Storer (1923) and Colebrook and Storer (1923) found that when blood is bactericidal to staphylococci this power exists equally in the plasma and the serum.

Defibrination robs the blood of its bactericidal property, according to the investigations of A. E. Wright, Morgan, Colebrook, and Dodgson (1914), Heist, S. Solis-Cohen, and M. Solis-Cohen (1918 and 1922), M. Solis-Cohen and Heist (1921), and of Smiley (1923). Many investigators nevertheless employ defibrinated blood with evident satisfaction. Walsh and Harmsworth found coagulation of the blood to increase enormously its bactericidal power and believe defibrinated blood to be markedly superior in bactericidal power to citrated blood. The bactericidal action of defibrinated blood was found by Thalhimer and Colwell to be greater, and by H. D. Wright to be less, than that of heparinised blood. The latter noted also that during the process of defibrination the blood is considerably altered and deprived of fibrinogen, while both observed a marked reduction in the number of leucocytes. On the other hand, Boys, Gunn, and Long found little difference between the bactericidal power of heparinised and of defibrinated blood if the defibrination be done carefully and with a constant technique. From the point of view of providing the patient with bactericidal fluid and leucocytes for immunotransfusion, it appeared to Colebrook and Storer to matter little or nothing whether unaltered or defibrinated blood is used.

There is a similar difference of opinion in regard to uncoagulable blood. Colebrook and Storer found that the addition of decalcifying agents to normal blood reduces considerably its power to kill staphylococci and streptococci. Citrated blood gave unsatisfactory results in H. D. Wright's hands, there being a very small margin between the amount of sodium citrate which is anticoagulant and what would be inhibitory to growth. Heparin, however, had no inhibitory effect upon the growth of pneumococci. Sodium citrate was shown by H. D. Wright and McCollum to interfere with antibody reactions in a most powerful manner so that even a small excess might very readily invalidate any results obtained. Walsh and Harmsworth also found that citrate inhibits the growth of staphylococci in the blood.

While Hamburger and Mudd, McCutcheon and Lucke have shown that the presence of the anticoagulants which precipitate calcium is known to interfere with phagocytosis, Boerner and Mudd have not detected any interference with phagocytosis by heparin. A. E. Wright (1915), however, with an improved technique believed he obtained conclusive evidence of bactericidal power with citrated blood. Bull and Tao also found that the power of citrated blood to resist the growth of pneumococci parallels the resistance of the animal to infection with these organisms, and that citrated blood from immunised rabbits is more potent than the corresponding serum-leucocyte mixture.

Those who believe that the property of killing bacteria resides in fresh whole coagulable blood, regard this as the best medium for determining and measuring bactericidal power. Among them are Bull and Bartual, Douglass, Fodor, Heist, S. Solis-Cohen, and M. Solis-Cohen, Matsunami and Kolmer, Smiley, M. Solis-Cohen and Heist, Walsh and Harsmworth, and A. E. Wright, Morgan, Colebrook, and Dodgson. It was discovered by Walsh and Harmsworth that blood develops bactericidal properties during the preliminary stages of clotting which bring about the formation of thrombin. Adami states "in the act of coagulation it is that the bactericidal substances are in the main liberated." Organisms were destroyed by coagulable blood at the end of five minutes in Black, Fowler, and Pierce's experiments. A. E. Wright infers that contact with the unaltered plasma, or possibly with the chemical changes associated with blood coagulation, is an essential factor in the destruction of the microbes.

Topley and Wilson regard the association between the growth-inhibitory action of the whole blood and the clearing capacity as very close, and state that the suggestion is obvious that this bactericidal or growth-inhibitory action of whole blood, or of serum-leucocyte mixtures, is in reality the result of the action of the leucocytes or the sensitised bacterial cells, and probably constitutes a more delicate method of detecting a specific sensitisation which is essentially similar to that involved in opsonisation, a view also held by Robertson and Sia. Rosenow, A. E. Wright, Ash and M. Solis-Cohen, Boerner and Mudd, and others regard phagocytosis as the principal means by which bacteria are cleared from the blood stream.

Serum-leucocyte mixtures have been used for determining bactericidal power by Rosenow (1906), Robertson and Sia (1924), and Boerner and Mudd (1925).

In 1906 Rosenow complained that previous investigators have commonly completely disregarded the influence upon phagocytosis that movement of the mixtures of blood and bacteria might have. To obviate this and to approximate more closely in vitro the conditions present in the circulation, he devised a small shaking machine. Shaking machines are used also in the methods devised by Skajaa, Todd, Bull and Tao, H. D. Wright, Thalhimer and Colwell, and Boerner and Mudd.

METHODS RECENTLY EMPLOYED FOR DETERMINING THE INFECTIVITY OF BACTERIA FOR THEIR HOST

Of the methods devised for determining the infectivity of bacteria for their host, employed during the past nine years, those of Courmont and Gardere and of Mackie and Finkelstein employ blood-serum, those of Robertson and Sia and of Boerner and Mudd employ serum-leucocyte mixtures, that of Lucena—which is employed chiefly in Italy—and that of Irwin and Hughes employ citrated blood, and those of Thalhimer and Colwell and of Boerner and Mudd employ heparinised blood.

The methods that have been most commonly employed are those utilising defibrinated blood.

In Ruge's method the patient's fresh, defibrinated blood is inoculated with her vaginal secretion and examined microscopically on a heated stage. In Philipp's modification the inoculated blood is poured on plates at intervals, the colony counts on different plates being compared. These methods have been used extensively, particularly in Germany, but are not considered reliable. In Todd's method, which a few investigators have employed, the defibrinated blood is inoculated with a pure bacterial culture, incubated in a mixing machine, and explanted into agar at intervals of 1, 2, and 3 hours.

A. E. Wright's slide-cell procedure is the most generally employed of his various methods. Graduated quanta of microbes are implanted into defibrinated blood and the implanted blood is then introduced into slide-cells, constructed by making four compartments on the convex side of a microscopic slide by laying strips of vaselined paper across it. Another slide, with the concave side down, is immediately pressed down upon this slide, the ends and sides being sealed with very hot melted paraffin wax. The slide-cell is then placed in the incubator and the microbes that survive grow out into colonies. Walsh and Harmsworth and Gonce and Kassowitz regard the procedure as unreliable. Fleming finds it unsuitable for *Streptococcus pyogenes* on account of technical difficulties, but regards it as admirable for such organisms as staphylococci, pneumococci, or *Streptococcus viridans*.

THE METHODS OF SOLIS-COHEN AND HEIST

Solis-Cohen and Heist employ fresh whole coagulable blood, whose bactericidal power was first demonstrated by Fodor [1] in 1887, and which A. E. Wright, Morgan, Colebrook, and Dodgson [2] in 1914 pointed out was often bactericidal when the separated serum or plasma showed no such effect. In 1918 Heist, S. Solis-Cohen, and Myer Solis-Cohen [3] demonstrated that the fresh whole coagulable blood of the pigeon, which is resistant to pneumococcus infection, is actively bactericidal for the pneumococcus, while the blood of the susceptible mouse or rabbit shows no such action; that the serum of a pigeon does not differ from that of a mouse or rabbit in its action

upon pneumococci; and that the fresh defibrinated blood of both immune and susceptible species is an excellent culture medium for the pneumococcus. They advanced the tentative hypothesis that when small numbers of bacteria are seeded in blood before it has time to coagulate only those bacteria grow and multiply which are pathogenic for the animal from which the blood is taken. They remark that any mechanism of immunity existing in the blood may be brought to bear upon the bacteria when their method is used. These authors also showed that recovery from pneumonia in humans is paralleled by an increase of the bactericidal power of the patient's blood, which is specific to type; that when strains of pneumococci of different degrees of virulence are cultivated in normal rabbit blood, the virulent grow more readily than the avirulent; and that many of the non-pathogenic bacteria usually met with as contaminations failed to grow when seeded in whole coagulable blood. All these observations have been confirmed by others.

Using the Heist–Solis-Cohen technique, Matsunami and Kolmer [4] found a parallel between the varying susceptibility of laboratory animals to meningococcic infection and the bactericidal action of their blood in vitro, and Malone, Avari, and Naidu [5] demonstrated a definite correlation between the bactericidal power of the blood of rats against *Bacillus pestis* and their immunity to plague. Heist, S. Solis-Cohen, and M. Solis-Cohen [6] showed that human susceptibility and resistance to meningococci, *Streptococcus hæmolyticus*, and colon bacilli could be demonstrated and measured in vitro by their test, with which Ash and M. Solis-Cohen [7] exhibited individual differences in human susceptibility to pneumococci.

M. Solis-Cohen and Heist [8] cultured the different organisms, present in various chronic and focal infections, in the fresh whole coagulable blood in vitro of their host and of one or more human controls, as well as in defibrinated blood, and found that the coagulable bloods of different individuals differ in the degree of their bactericidal power against the same organism, but that defibrinated blood lacks bactericidal power. The germs that are able to grow in the whole coagulable blood of their host in vitro they regard as probably of ætiological significance.

They employed two different methods. The first was the one devised by Heist, S. Solis-Cohen, and M. Solis-Cohen [3] in 1918, in which each of a series of graduated dilutions of a pure bacterial culture is allowed to run in and then out of one of a similar series of capillary tubes, leaving a film on its inner wall, as in A. E. Wright's wet-wall method. The tubes are then filled with the fresh whole coagulable blood of the animal or individual tested, sealed, and incubated for 24 hours, the tips then being broken off and a drop from each blown on a slide, fixed, stained, and examined to see whether the organism has grown up or has disappeared. With this technique, which has sometimes been called the Heist-Lacy or Lacy-Heist method, Thalhimer and Colwell could detect gross but not slight differences in the bactericidal activity. Silverthorne and Frazer believe it may afford a positive means of testing an individual's immunity or susceptibility to meningococcus infection, but Bull and Bartual do not regard the method as sensitive enough to classify individuals of the same species with respect to susceptibility to pneumococci infection. The absence of a mixing process is stressed by Robertson and Sia. Smiley [9] found the readings with the method inconsistent and not constant.

THE PATHOGEN-SELECTIVE CULTURE

The second method is called the pathogen-selective culture [8 10 11a 12] and is occasionally referred to as the Cohen-Heist method. The material to be cultured is inoculated into a rich culture medium, such as a deep tube of glucose brain broth, and is also rubbed on the bottom of a sterile test-tube, containing a few drops of bouillon—to prevent the smear from drying. 3–5 c.cm. of the patient's fresh whole coagulable blood, obtained from a vein, is then placed in the inoculated empty tube. After 18–24 hours incubation at 37·5° F., smears and blood-agar plates are made from both tubes, the former being examined immediately and the latter the following day. In subacute, chronic, and focal infections, the organisms that grow in the patient's coagulable blood are regarded as those most pathogenic for him. For such cases, therefore, the method is believed to furnish a means for selecting the ætiologically important organisms from a mixed culture. The organisms usually classified as pathogenic for man—namely, streptococci and staphylococci—were the ones that grew most frequently in the patient's whole coagulable blood in 404 pathogen-selective cultures in chronic and focal infections analysed by Boerner and Solis-Cohen.[12] The organisms most frequently found grew in the patient's coagulable blood in the following percentages: streptococci (hæmolytic) 78·1, *Staphylococcus aureus* 72·5, streptococci (*viridans* group) 65, streptococci (non-hæmolytic) 61·2, *Corynebacterium pseudodiphthericum* 42·8, *Diplococcus pneumoniæ* 40·9, *Staphylococcus albus* 35·1, Gram-negative cocci (unidentified) 21, and Gram-negative bacilli (unidentified) 9·5. No *Neisseria catarrhalis* or *N. siccus* grew up in the patient's blood.

In from 11 [12] to 18 [13] per cent. of pathogen-selective cultures, organisms grow up in the patient's coagulable blood which fail to grow up in the rich culture medium and which therefore would be missed were the infective material not inoculated directly into the patient's coagulable blood. This is a distinct advantage possessed by the pathogen-selective method over the Heist-Lacy method and over all selective methods requiring pure bacterial cultures.

While the pathogen-selective method gives only approximate quantitative results, it can be used for measuring the degree of bactericidal power against a particular germ by placing graduated dilutions of a pure culture into a series of sterile small, serological tubes, into each of which 1 c.cm. of the host's whole coagulable blood is then placed. Such a method is employed by Smiley [9] and Robinson with coagulable blood and by Bull and Tao with citrated blood.

Cronin Lowe [13] is careful to inoculate equal quantities into the rich culture medium and into the patient's blood. He made several control experiments, planting equal quantities of the same specimen into more than one sample of the patient's blood and into both the patient's and a normal person's blood, and having duplicate examinations made in separate laboratories by different workers. In every case the same bacteria were isolated. A negative pathogen-selective culture suggests to him a purely local infection.

Shearman [14] emphasises that the amount of inoculum used must be very small, and he increased the accuracy of the method by making a second culture in the patient's coagulable blood with one-third of the amount of inoculum placed in the other blood-tube. His control tests, in which blood from apparently healthy people was inoculated in parallel series with that of the patients, failed to show one instance in which the organism, ultimately

recovered through the patient's own blood, was able to resist the bactericidal effect of healthy blood.

Warren Crowe [15] says the method is able to discover some microbe hitherto unsuspected in the case. It has afforded valuable evidence in his studies on arthritis, inasmuch as he has found the bactericidal power of the blood very low to *Micrococcus deformans* in a large number of patients with chronic arthritis—quite independent of his clinical experience. Smiley [9] found the method employing test-tubes to give constant and conclusive results. The method has also been employed with success by Robinson, Graham, Barlow, Thomson and Hill, Vischer, Walls and others.

Parks [16] believes that bacteria that are destroyed by an individual's coagulable blood probably are incapable of producing a bacteræmia, but still may produce a localised infection, an opinion shared by Kolmer. Kolmer and Boerner [11b] think the test may be helpful in selecting bacteria for vaccines in mixed infections on the basis that only those capable of growing in the whole coagulable blood of the patient are apt to be virulent.

Fleming and Petrie [17] think there is not sufficient evidence to warrant the assumption that the use of blood from the patient ensures a better selection than does normal human blood, and believe it is not justifiable to assert that the particular strain or strains of bacteria which can flourish in the patient's blood are the actual infecting microbes.

The theoretical foundations of the method are considered insecure by Short, Dienes, and Bauer,[18] who state that in the majority of chronic infections a marked resistance develops against the invading bacteria, and that we should expect an increase, rather than a decrease, of the bactericidal effect of the blood. In the tests reported by M. Solis-Cohen,[10] M. Solis-Cohen and Heist,[8] Boerner and M. Solis-Cohen,[12] Cronin Lowe,[13 19] Thomson and Hill,[20] Shearman,[14] and others, however, the bactericidal power of the patient's blood against the infecting organism was actually lowered or absent. In chronic infections, according to A. E. Wright,[21] the defensive forces of the organisms ineffectually combat the invading microbe and, according to Kolmer,[22] the body cells become accustomed, as it were, to the toxic products of parasites, and produce only sufficient antibodies to effect their immediate neutralisation. If Short, Dienes, and Bauer refer to the presence of agglutinins, precipitins, and complement-fixing bodies, their lack of correspondence with the clearing capacity has already been mentioned. Moreover, the presence in the blood of the protective substances, even in large amounts, as Dudgeon [23] remarks, is not necessarily an indication of the patient's resistance to a bacterial infection.

Investigations by leading immunologists, therefore, support the view that the virulence of bacteria for an individual and the resistance or susceptibility of an individual to a germ depend on the ability of such individual to remove that microbe from his circulation—an ability reflected in the bactericidal power of his fresh whole coagulable blood.

Of the various methods employed for determining the infectivity of bacteria for their host it thus would appear that the pathogen-selective method is not only the simplest but also the most reliable and the most accurate of those available for clinical use.

SUMMARY

1. The mere presence of a microbe on a mucous membrane or on the secretion from it does not indicate infection, nor in chronic and focal infections is the predominance of a germ evidence of any relationship between it and such infection.

2. Serologic and intracutaneous tests and Rosenow's selective affinity procedure are not regarded as valid for determining the infecting organism.

3. During the past fifty years many different methods have been devised for determining and measuring the bactericidal power of the blood, employing blood-serum, the cellular elements of the blood, defibrinated whole blood, whole blood rendered uncoagulable by the addition of sodium citrate or heparin, fresh whole coagulable blood, and serum-leucocyte mixtures.

4. Some of these tests have been utilised for determining in the individual case the infectivity of a germ for its host.

5. In chronic and focal infections the pathogen-selective culture utilises the bactericidal power of the patient's fresh whole coagulable blood for selecting from a mixed culture the ætiologically important organisms.

6. Comparison of the various methods suggests that the pathogen-selective method is not only the simplest but also the most reliable and the most accurate of those available for clinical use.

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CLINICAL ASPECTS OF
AN OUTBREAK OF TYPHOID FEVER

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THE recent outbreak (August and September) in the neighbouring boroughs of Poole in Dorset, Bournemouth and Christchurch in Hampshire was, soon after it arose, traced to a milk-borne infection by *Bacillus typhosus*, the source being a particular dairy which had distributed milk that had become infective during the last week of July, possibly earlier, continuing so until rendered safe on and after August 22nd by being pasteurised. It was believed at that time that the outbreak would last some four or five weeks, then disappear suddenly, only a few secondary cases being likely to occur thereafter. Subsequent events proved these early anticipations to be correct. The expected three-weeks' interval between the adoption of pasteurisation and the cessation of notifications of fresh cases took place.

By Sept. 23rd the outbreak was at a standstill, Bournemouth (according to the figures kindly given me by Dr. H. Gordon Smith, M.O.H.) having had 293 notified cases with 22 deaths—during the latter days there being mild cases only. Confirmation of the diagnosis was, however, not possible in a few of the notified cases. Poole had had a total of 202 patients, with 16 deaths, having already discharged as cured 38 patients. Up to Sept. 15th Christchurch had 28 notifications with no further new cases following that date; here there were 2 deaths, increased to 3 on Sept. 21st. Each case was discharged from hospital only after three successive loose stools, taken several days apart, and one specimen of urine had proved negative on examination for *B. typhosus*, these specimens not being taken before the temperature had been subnormal for at least a week.

The disease in this outbreak, as in other outbreaks happening elsewhere, has "bred true," so that its progress was, in most, quite orderly, symptoms and signs arising to time. Knowing the day of disease, it became possible to anticipate what was going to happen, so that one felt armed thereby against likely complications and against the disease itself.

The outbreak being milk-borne, children naturally suffered most and severely at the start, adults later and, perhaps, less so. As expected, the disease was found to be commonest between ages of 10–35; after 35 the incidence decreasing up to 40, being comparatively rare after that age, though a number of patients aged 60–75 had been notified. Early in the outbreak a number of young infants were attacked, faring badly as infants generally do. In these, the principal signs did not differ from those in adults except that the fever was more irregular, the pulse faster in proportion to the temperature, and nervous system manifestations were more prominent.

CLINICAL TYPES

The disease at the start had all the appearance of a septicæmia with localisation in the intestine, although in children this localisation was not so apparent. Several cases appeared to commence as a pneumonia with atypical lung physical signs. On a tour of the wards, the temperature charts examined showed the ordinary three-weeks type of the disease, and latterly as often, or oftener, evidence of pyrexia prolonged into the 3rd and 4th and 5th weeks. They showed high peaks as evidence of incidence such as attempts to start extra feeding, temporary diarrhœa, insomnia, and subcutaneous abscess; and occasionally steep falls in collapse, intestinal hæmorrhage, perforation. This latter, unusual in young children, happened more often than is usual, probably owing to the virgin soil or to the virulence of the strain of bacillus, or both.

POINTS IN DIAGNOSIS

Difficulties arose in the diagnosis of the first few cases of the outbreak. The earliest diagnostic sign was, as is usual, the steady "staircase" rise of temperature to 104° F. or more by the evening of the fourth day. In our climate such a temperature can surely be caused by few other diseases in the months of August, September, and October, when the seasonal prevalence of typhoid is greatest. At the same time, the pulse-rate kept comparatively slow, in adults seldom exceeding 80–90 even at the height of the disease. Again, a sudden onset, although fairly frequent in children (11·9 per cent.), was rare in adults in whom it was usually insidious. Amongst the Bournemouth cases, several with sudden onset simulated appendicitis; here pain at McBurney's point and a leucocyte count could be used to differentiate the one disease from the other, if the possibility of appendicitis occurring in the course of typhoid fever is kept in mind. The next useful sign was epistaxis, generally on the 2nd and 3rd day. By the 4th or 5th day the diazo reaction became positive, though not in all; this test, to be of use, must be very carefully performed, otherwise it is useless. Towards the end of the first week, dizziness on movement was complained of by some. Even such a subjective symptom, with intense headache at the start along with an increasing lethargy, should arouse the suspicion of typhoid, particularly in the presence of a steadily rising temperature. Deafness during the second week was a diagnostic feature. In this outbreak few positive blood cultures were obtained.

Widal test.—After the 10th day of illness the Widal test was, in a number, negative; but the absence of a positive Widal test, in the presence of good clinical evidence, should not influence a medical man in his diagnosis of typhoid fever. By some, complement-fixation has been found to be more reliable than the Widal test because of the latter being found to be repeatedly negative in patients with undoubted typhoid; as also because prophylactic inoculation produces agglutinins which, persisting as they do for long periods, negative the value of the Widal test. It is really a question whether the bacteriologist has not placed too high a value upon his share in the diagnosis.

Blood pressures.—Dr. James Ronald Kerr at the Victoria branch of the Royal Victoria and West Hants Hospital, taking observations on 38 cases of typhoid fever, found the systolic blood pressure in the adult much reduced by the 7th day, the average being 95–120 mm. Hg, though the diastolic pressure remained 60–80—i.e., normal—using Halls Dally's table of comparison. Up to 35 years the blood pressures he found reduced; though at ages 40–50 they were not so affected. Over 50 the blood-pressure reading was 110/75 (average of six cases).

The Marris test.—Dr. Kerr, doing Marris's atropine sulphate test by giving gr. 1/33 hypodermically and comparing the pulse-rate before and after, found equivocal results. Atropine increases the pulse-rate by 20–40 normally, but hardly at all in the enteric group. An increase of 10 or less, however, may suggest one of the typhoids. The best time to do this test is said to be during the second week. The reaction appears quickly in the inoculated, persisting for 10 weeks.

Care had to be exercised in determining the exact day of disease. It sometimes happened that the patient was first seen during a relapse; or, in a previously ambulatory case, during the third week when the temperature was remittent with a wide diurnal variation. The spleen enlarging to time, the distinctive eruption, the positive Widal, and the leucopenia, always indicate typhoid of one kind or another.

COMPLICATIONS

Among the more important complications met with were abdominal pain occurring early in the disease, localised to one sector of the abdomen in some, in others diffused throughout the abdomen; ulcerative angina with appearances easily distinguishable from those seen in diphtheria; bronchopneumonia; and collapse. This collapse was due not to hæmorrhage but to toxæmic poisoning of the bulbar centres with neurocirculatory failure, and to

depletion of the circulation of necessary fluid. Collapse was not found to occur till after the beginning of the third week. The signs were as follows: (1) sudden steep fall of temperature; (2) sudden fall in blood pressures; (3) pinched, anxious expression of face; (4) cyanosis of skin; (5) weak, running pulse; (6) rapid breathing, suggestive of air-hunger; (7) rigor. Great care had to be exercised in differentiating collapse from perforation, particularly in those in status typhosus, where the intensity of pain was much weakened by the extreme toxæmia and exhaustion of the patient. This had to be done by estimating the comparative difference in intensity of the pain. In collapse the pain is much less severe; there is an absence of any restlessness; abdominal breathing persists; and the muscular resistance in the right lower quadrant is less decided than in perforation. The duration of collapse is 3–4 hours, but may continue for much longer. The prognosis is good, but recurrences are frequent. In perforation the whole attitude of the patient is changed, the appearance of the abdomen is completely altered for the worse, the pain is more intense, the liver dullness disappears, the pulse quickly speeds up, and the expression of face becomes anxious—all even in the space of minutes. In collapse the abdomen has been opened but no perforation found, so that a very careful investigation must be made in each case to remove any doubt. If this remains then operation seems justified, although this may gravely prejudice a patient's recovery, precarious as it usually is, whether the complication be a collapse or a perforation.

Other complications occurring were cystitis, encephalitis of temporary kind, endocarditis, furunculosis, intestinal hæmorrhage, subcutaneous abscess, and venous thrombosis. Although perforation is uncommon in children, several did perforate. The complication seldom occurred before the end of the third week. Pleurisy occurred rarely. A few suffered relapse; although relatively common in typhoid fever (10 per cent.), this happened but seldom during the outbreak.

The status typhosus appeared in the severest cases. This added greatly to the gravity of a case and meant extreme toxæmia with exhaustion. Although most patients had double incontinence, several had retention of urine, at first with overflow, when the lethargy overtook them. During the height of the outbreak the typhoid wards were strangely quiet with inert, motionless, dreamy patients, who needed close watching and everything done for them, so that the nurses had the greatest difficulty in administering fluids, especially a sufficiency of water. It needed all the attention of the nurse to force a sufficiency of fluid upon the patient, who was able to take and swallow only a small mouthful at any one time.

PROGNOSIS

A patient with typhoid fever usually tends to recover, for it is a natural proclivity in one with the disease. What adds to its seriousness, however, is the wide range of complications; it is this fact that contributes most to the death-rate. Hæmorrhage, perforation, and profound toxæmia constitute the most grave complications; of these, toxæmia accounts for most deaths, through neurocirculatory or vasomotor paralysis; this held true in the Bournemouth outbreak. The prognosis in typhoid collapse is good; so also is it in relapse. As a rule, a late positive Widal is of grave import.

TREATMENT

In typhoid fever the patient has to fight his own battle, so that in the management of the disease he has to be placed in as favourable a position as it is possible, so as to enable him to do so with the best chance of recovery. Much can be done to obviate complications; in fact, much of the treatment aims at this. The patient must be treated rather than the disease, and nothing is so important as (1) to maintain nutrition, and (2) to support the fluid balance in the tissues.

Diet.—A low diet consisting of milk alone, although formerly closely adhered to—as it still is by some—appears to have been decided chiefly by fear of the consequences of allowing anything more upon an ulcerating intestine, rather than by the needs of the patient, and seems at this time of day a poor support for any patient suffering from typhoid fever. It meant too low a diet. A high calorie diet, one of 2500–3000 C., has been found to produce better results: there have been fewer complications, with a speedier and better recovery, and even a lower mortality-rate. In the early stages milk should, of course, form the basis upon which the diet is built up. For an adult, 3 pints a day should be given in 5 oz. feeds every two hours with half volume of water added, and a sufficiency of salt to encourage thirst and so the retention of fluid in the tissues. Probably the feedings should be given during the day only. Orange and lemon juice in well-made barley water, with syr. glucos. liq., B.P., or Glucose-D added, can be given freely, and water alone, these being fed to the patient as often as possible. It is strange how the typhoid patient seldom asks for a drink, so that it is the nurse's duty to see that the necessary quantity is administered periodically, even by being forced upon the patient, and consumed within a definite period of time. This is so particularly with feedings of milk; ten minutes should be allowed the patient to consume the full quantity measured for him. Tea or coffee or maltine can be added if milk itself is disliked, as it sometimes is. A pint of beef tea or chicken soup, well salted, can be administered in three or four portions—one given at the usual lunch time, one at bedtime, and one portion in the early morning when the patient's vitality is lowest. The very real need for a diet which includes the accessory food factors must be kept in mind. Until the temperature had fallen, any increase in diet was given with the greatest caution, and made more boldly only after the pyrexia had ceased; but each case was, so far as feeding was concerned, treated on its own merits.

The *ward temperature* was kept at or above 65° F.; one pillow was allowed; and the patient was on no account permitted to sit up in bed.

Water-balance.—Next to diet, the maintenance of the fluid balance seems to me to be important. The greatest difficulty is often encountered in getting the patient to take the necessary quantity of fluid, particularly when it is most needed, while the temperature remains up. Where this becomes impossible, then the best means of giving it is by proctoclysis. Such can usually be done even where there is incontinence; the decubitus and quietness of the patient both help. In fact, rectal saline given by the drip method (one drop per second to 100 drops per minute) may be given, using a Souttar or a Lennox Wainwright saline apparatus. A pint Thermos flask will last two hours. Either boiled water with added glucose, or normal saline with glucose, at 100° F., can be given in this way, without

undue rise of pressure exciting hæmorrhage from the bowel. If rectal saline administration fails, the same may be given by needle deeply subcutaneously into the fronts of both thighs using a Y-tube and suitable needles; or 250 c.cm. of a 25 per cent. solution of glucose in filtered, sterile, double-distilled water may be given intravenously through a small needle, taking a full hour to administer; intravenous glucose in water by the continuous-drop method is useful. Any or all of these methods can be used to supplement fluid given by mouth, and will go a long way towards combating or preventing dehydration, auto-intoxication, auto-toxæmia, and even nitrogen starvation. Collapse is usually due to dehydration, and can be prevented or met by proctoclysis or saline transfusions.

Sponging night and morning or every four hours is helpful and indeed necessary, and also at times when the temperature is 103° F. or more. This should be done quickly and, of course, lightly. For temperatures about 105° F. an ice-bag may be applied to the head if the patient is kept otherwise warm.

Care of the mouth and tongue.—From the very beginning the mouth and tongue should be cleansed by swabbing at least twice daily. Particularly is this necessary during the third and fourth weeks when mouth, tongue, and lips become parched, dry, and covered by sordes; and the nostrils becoming blocked, the patient can only breathe through the mouth. The best cleanser is Wyllie's ointment for the purpose:

℞ Acidi borici .. .. .. grs. 60
Ol. menth. pip. .. .. .. ℥ v.
Vaselini alb. .. .. .. ad 1 oz.

Applied and used by means of a soft, cheap badger tooth-brush, nothing is better; ointment is certainly more easily used, and more effective than glycerin or aqueous solutions. Kolynos tooth-paste does well for cleansing teeth and gums. Hydrogen peroxide (10 vol.) should be used to spray the mouth before using the ointment. If unattended, the tongue and mouth become dirty, sore, and horribly septic, so that feeding and swallowing become nearly impossible. This is particularly so in children who begin to dread the painful act of swallowing.

Drugs.—Urotropine is in no way specific in typhoid, nor is any drug. Urotropine is apt to cause hæmaturia so that its effect should be carefully watched; it is best given combined with large doses of an alkali such as potassium citrate. Cinnamon oil, quinine, and many others may be given, but it is questionable whether any is of real use. The coal-tar derivatives given in attempts to control the pyrexia are dangerous; for that purpose sponging is safer and in every way better. In hæmorrhage, morphine must be given circumspectly, if at all, because of the risk of masking the signs of perforation. Better in hæmorrhage is Dover's powder in repeated doses, and turpentine ℥ 10–20 in almond emulsion by mouth. In hæmorrhage calcium, being doubtful in its results, is best avoided altogether because of the risk of thrombosis; besides, milk probably allows sufficient calcium to be given; horse-serum is best of all, or Hæmoplastin 2 c.cm., intramuscularly, or Coagulen (Ciba). Immediately the temperature falls, halibut oil should be allowed and iron with malt and ergosterol (ext. malti c. vitaminis B.P.C. with 1 drachm or so of syr. ferri phos. Co., B.P., added). In collapse from neurocirculatory failure give, intramuscularly, the injectio adrenalini co., repeating every half hour, or at longer intervals if need be; nothing is more effective.

Serum.—An efficient serum is theoretically the ideal specific therapy, though the results of its use are not convincing. The Lister Institute serum we have found useful, as to 25 c.cm. given intramuscularly, repeating twice if found helpful at 24-hour intervals. Other methods of treatment employed were: convalescent serum injected intramuscularly in doses of 5–20 c.cm. repeated (twice or thrice) every five days; and auto-hæmotherapy, 5–10 c.cm. of blood so repeated.

Sero-vaccine.—Perhaps the best results should be obtained by the use of combined serum and vaccine treatment. As a rule a vaccine appeared to act best if given before the 10th day; in smaller dosage for severe, larger for mild cases, given in increasing doses every 3 or 4 days, starting with 25 or 30 millions of a sero—or sensitised—vaccine, increasing the amount by 100 millions for each following dose. The results of vaccine therapy in the present outbreak have been equivocal.

Immuno-blood transfusion is of the greatest possible use given in small doses intravenously and repeated. The immuno-transfusion of blood is specially indicated in severe intestinal hæmorrhage, in relapsing forms of typhoid in the very toxæmic patient, as well as in protracted forms of the disease.

THE SURGERY OF HÆMATEMESIS IN CHRONIC PEPTIC ULCER

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The advisability of surgical intervention in cases of severe hæmorrhage from chronic peptic ulcer has always been keenly debated. Physicians are in the main opposed to operation, for they believe that better results can be obtained from medical treatment alone. It may be that there has been a tendency to exaggerate the value of medical measures, for occasionally one hears it said by practitioners of experience that they rarely if ever see deaths from hæmatemesis due to peptic ulcer when medical treatment has been adopted. Such experience is fortunate, not to say exceptional, for there is no gainsaying the fact that patients do die from this complication. It would seem indeed from recent estimates that the mortality is anything but low, even in circumstances where the best possible medical care is available.

Aitken,[1] in a comparative review of statistics from various London hospitals, found fatality-rates that ranged from 2·5 per cent. to 25 per cent., and came to the conclusion that about 10 per cent. of patients who have moderately severe hæmorrhage die from it when treated medically. Lloyd Davies and Nevin,[2] reviewing cases of severe hæmorrhage from peptic ulcer in which medical treatment alone was adopted, found that there was a mortality of 40 per cent., and that if a second hæmorrhage occurred this figure rose to between 70 and 80 per cent. The fatality-rate for all severe cases, according to this estimate, is therefore between 40 per cent. and 75 per cent.—an appalling figure and one obviously only applicable to very severe cases of obvious arterial hæmorrhage. Yet, in spite of this serious

mortality, there has been unwillingness to act on the axiom that a dangerous bleeding point should be cut down upon and dealt with (directly or indirectly), because it has been held that operation carries even greater dangers. Nearly all cases of hæmatemesis are first admitted to a medical ward, and if there can be said to be any rule in their treatment it is that the surgeon is not called in until a second hæmorrhage occurs. In these circumstances it is no wonder that surgery is not attended by any striking success.

The apparent reluctance of surgeons to champion their cause with statistics is often taken as a confession of failure; and indeed there are few recorded series in which hæmorrhage has been treated surgically. A remarkable exception, however, is provided by Finsterer,[3] who has shown beyond doubt, as far as his clinic is concerned, that the safest method is immediate operation. Gordon-Taylor's [4] figures are even more convincing, because in his practice he has passed through a period of advising expectant treatment before being forced to return to the practice of immediate operation.

WHAT OPERATION SHOULD BE DONE?

We do not wish in this paper to enter into the question of medical as opposed to surgical treatment, but rather to discuss what type of operation, if surgical treatment be adopted, is most likely to ensure recovery. The operation is an emergency one, and the surgeon's aim should be to make it as short as efficiency allows. Exsanguinated patients are unfit to stand the strain of a long operation, and consequently we think that partial gastrectomy should not be adopted as a routine. Few surgeons have the experience and practice of Prof. Finsterer in duodenectomy or partial gastrectomy, and few can hope to emulate his success in them. It is to be noted, too, that Gordon-Taylor, who has had much experience of these conditions, does not insist on these greater operations as routine treatment, and varies his operation according to the conditions found. We feel that if such major operations were generally adopted the results would on the whole be far worse than those of medical measures alone. The treatment of hæmorrhage itself is an urgent matter, and the ulcer that causes it should be left for later treatment if necessary. We are inclined to go further and say that we do not even consider gastrojejunostomy essential, except occasionally as a supplementary operation, for it has no direct effect upon the bleeding point, and it is doubtful if it exercises any indirect action. This is exemplified forcibly in some of our own cases.

CASE 1.—A man, aged 58, was admitted to hospital with a history of severe hæmatemesis before admission. He had a second one soon after entering hospital and surgical treatment was decided upon. At operation the stomach appeared normal, nor was an ulcer visible on the anterior surface of the duodenum. Following accepted teaching, a gastrojejunostomy was performed but two days later the patient had another big hæmorrhage and died within an hour. Post mortem the source of the bleeding was found to be a large open-mouthed artery in the floor of an ulcer on the posterior surface of the duodenum.

CASE 2.—A man, aged 52, was admitted with a history of hæmatemesis and signs of severe continuous bleeding. At operation no gastric ulcer could be found, and in view of the experience of the previous case it was thought that the hæmorrhage was probably coming from an ulcer on the posterior surface of the duodenum, though none could be distinctly palpated. Gastrojejunostomy was done and in addition infolding sutures occluding the pylorus and embedding the anterior surface of the duodenum were inserted. The hæmorrhage, however, persisted and the patient died. Post-mortem examination confirmed the presence of a bleeding ulcer on the posterior surface of the duodenum.

From these cases we concluded that gastrojejunostomy per se does not stop hæmorrhage. The next

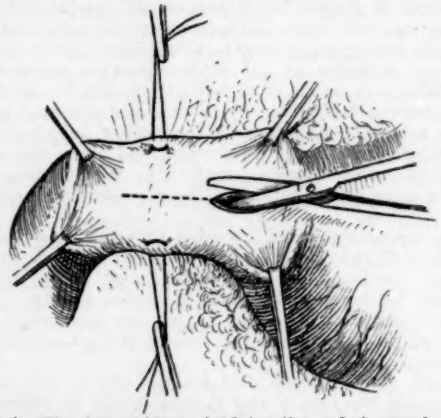

FIG. 1.—The two sutures steadying the pyloric muscle, the placing of the Alliss forceps, and the beginning of the exploratory incision. This can if necessary be made to divide and include an anterior ulcer.

method adopted was the ligature of arteries leading to the ulcer, and this was done in two cases with success.

CASE 3.[5]—The patient had undergone an operation previously for perforated duodenal ulcer at which closure of the perforation and gastrojejunostomy were carried out. He was admitted with severe hæmorrhage the cause of which was presumed to be gastrojejunal ulcer. His pulse-rate rose steadily and operation was advised. After a blood transfusion the abdomen was opened and a small gastrojejunostomy found near the pylorus. This was examined and proved perfectly normal, but an ulcer was palpable on the posterior surface of the duodenum. The gastroduodenal artery was tied and the pylorus occluded.

CASE 4.—The patient was a woman who had undergone a Balfour type of operation nine days previously for gastric ulcer. She vomited copious amounts of blood and her pulse-rate rose steadily. The hæmorrhage was thought to be coming from the cauterised ulcer, and the abdomen was therefore opened after a blood transfusion and the coronary artery tied above the site of the ulcer. She recovered and a year later had her gall-bladder removed for gall-stones, during which operation her stomach and the gastrojejunostomy were examined and found to be apparently normal.

It is to be noted that although gastrojejunostomy had already been performed in these two cases, it had no arresting effect on a hæmorrhage occurring later.

In discussing with one of us the question of ligature of the gastroduodenal artery for hæmorrhage Prof. Finsterer gave it as his opinion that such ligature might in a small proportion of cases lead to a necrosis around the head of the pancreas owing to inadequate anastomosis. Furthermore, the procedure did not seem to us to be completely satisfactory inasmuch as it was not certain at the time of operation that the desired result had been obtained. In spite therefore of the successful cessation of the hæmorrhage in the above cases we were led to adopt the type of operation recommended by the surgeons of the Mayo Clinic for interval operations on duodenal ulcer—namely, exploration of the duodenum and a direct treatment of the bleeding point. We have done this in three cases, with success in each, and though the number is not large enough for definite conclusions it is evident that the method not only

provides means of stopping the hæmorrhage but (as shown by the figures of Judd and Hazeltine [6]) will often afford lasting cure of the ulcer itself. Our patients were men aged 47, 51, and 61.

INDICATIONS FOR OPERATION

1. The figures of the Mayo Clinic indicate that 90 per cent. of cases of hæmatemesis give a history of ulceration averaging five years' duration. If previous investigations point to an ulcer in the first part of the duodenum one will be more strongly biased towards operation, because here—particularly posteriorly—is the most vascular part of the ulcer-bearing area, and ulcers are most likely to bleed severely.

2. When a patient is admitted after a severe hæmorrhage his blood-group should be determined and his hæmoglobin estimated. If the latter is low (i.e., below 40 per cent.) an attempt must be made to raise it by blood transfusion; for operations, particularly

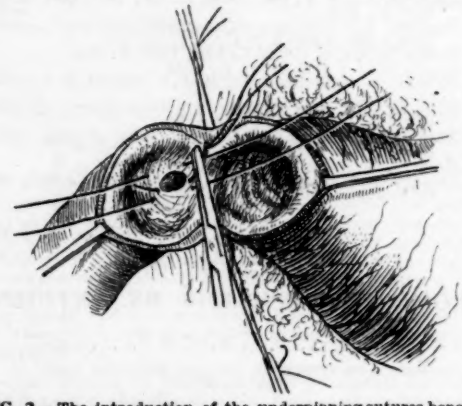

FIG. 2.—The introduction of the underpinning sutures beneath the ulcer. The needle should be more fully curved than is shown in the diagram.

those on the stomach, are attended by a high mortality where the hæmoglobin percentage is low. It must be emphasised, however, that a high percentage is not a reliable indication of the patient's condition in urgent cases, as the true figure may not be reached for 48 hours.

A transfusion should therefore be given after every severe hæmorrhage. It is administered as the continuous blood-drip transfusion which is one of the most important advances in the treatment, whether medical or surgical, of bleeding ulcer. The form of apparatus used is that described by Marriott and Kekwick [7] which though apparently complex is simple to assemble. If despite the transfusion the pulse-rate steadily increases, operation should be advised whatever the hæmoglobin percentage may be. A rising pulse-rate we consider to be the most important indication for surgical interference.

3. In general it can be laid down that under the age of 40 operation is less likely to be urgently required, for in a young man the arteries are less often affected by arterio-sclerotic changes and are more contractile. The ulcerated area is, moreover, likely to be less hard and fibrous. The truth of this was shown by Allen and Benedict [8] who found that the average age of fatal cases was 56·3, whereas the average age of those that recovered was 41·8.

OPERATION

A midline abdominal incision (in preference to a paramedian incision) is used in order to save time. This can be supplemented if necessary by a transverse incision through either rectus muscle. A short examination of the stomach will readily demonstrate the presence or absence of a chronic ulcer. An ulcer on the anterior surface of the duodenum will be obvious, but some posterior duodenal ulcers are not easily detected without opening the gut, and this is a situation which for reasons already stated is a common source of hæmorrhage, especially severe hæmorrhage requiring immediate surgical treatment. If therefore no obvious ulcer is found, or if a duodenal ulcer is discovered, the following procedure is adopted.

A long-bladed retractor is used to draw the liver upwards and give adequate exposure of the duodenum. Peritoneal forceps are placed on the superior and inferior borders of the latter, about 3 cm. below the pylorus, and similar forceps an equal distance above it as indicated in Fig. 1. The surrounding areas and Rutherford Morison's pouch being packed off, an incision is made into the stomach an inch above the pylorus, a sucker is introduced, and the blood and gastric contents are evacuated. The importance of this is illustrated by one of our cases in which the gastroduodenal artery was tied and hæmorrhage was successfully controlled, but the patient died 36 hours later from acute pulmonitis. Post mortem this was shown to be due to regurgitation and inhalation of the stomach contents. Two sutures are then introduced through the superior and inferior limits of the pyloric muscle and the incision prolonged through it and into the duodenum. This incision should be as short as is consistent with adequate exposure of the ulcer, and can be made to include an ulcer

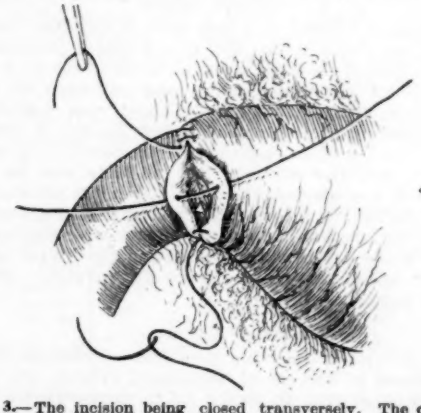

FIG. 3.—The incision being closed transversely. The centre suture approximates the limits of the incision. This is tied before beginning the continuous suture.

on the anterior wall if one be present. A long incision will make the method of closure described hereafter a difficult operation and may necessitate mobilisation of the first part of the duodenum.

The bleeding point and the ulcer on the posterior wall are treated by infolding the area with a series of underpinning sutures introduced parallel to the long axis of the duodenum by means of a stout medium curved needle with No. 0 or No. 1 catgut and gently drawn tight (Fig. 2) The ordinary eyeless needle with catgut attached is unsatisfactory because it tends to bend and to slip in the needle-holder. In closing the opening thus made a pyloroplasty is performed by sewing up transversely, one stitch being first inserted to approximate the duodenal and gastric limits of the incision (Fig. 3). If any difficulty is encountered in bringing together the lips of the opening in this manner, the duodenum should be mobilised. If the anterior wall of the duodenum is ulcerated and fibrosed to such an extent that pyloroplasty cannot be done, the incision should be closed, embedding sutures inserted, and gastrojejunostomy performed. This is the only circumstance in which we consider a short circuit necessary. It need hardly be emphasised that the tissues of

the duodenum are more delicate than those of the stomach and care must be taken when approximating the surfaces to avoid the sutures cutting out on the duodenal side.

By this operation not only is the bleeding stopped, but a recognised method of curing the ulcer itself is employed which obviates the necessity of a duodenectomy, a tedious and difficult operation and one certainly inadvisable in a case where the patient is in a critical state.

By underpinning the ulcer and thus including in the needle-bite the underlying tissues we have not in any of the three cases mentioned found any difficulty in getting sutures to hold. It is quite probable, however, that in cases such as those described by Hurst,[9] difficulty may be encountered, for undoubtedly there must be some in which the ulceration is so extensive that no medical or surgical treatment will save the patient. Such a condition, of course, cannot be ascertained without operation. One of us has seen a case where another surgeon was able to catch the bleeding point but the sutures which were intended to embed the ulcer were not underpinning sutures and immediately cut through. If in such cases deep sutures occluding the ulcer cannot be introduced successfully, because of the extent of the ulcerative process, the gastroduodenal artery should be tied. Balfour and Eusterman[10] speak highly of the value of the cautery in such cases, but we have no experience of it.

GASTRIC ULCER

We have treated only two cases of bleeding gastric ulcer in addition to the one already mentioned. In the first of these there was an ulcer on the posterior surface of the lesser curve and although it was adherent posteriorly, no difficulty was found in ligaturing arteries above and below the site of ulceration. In the other case there was a penetrating ulcer of the posterior surface; the anterior wall of the stomach was opened, the gastric contents evacuated, and a method of underpinning similar to that described above for posterior duodenal ulcers was employed. A small piece of rectus muscle was placed in the ulcer crater before the sutures were drawn tight. Both these patients recovered.

CONCLUSIONS

In this paper we have given our conclusions from experience of the cases mentioned. These are not numerous enough to enable us to dogmatise on the subject, but they show that the surgical treatment of hæmorrhage can successfully follow conservative lines. The proportion of cases of hæmatemesis seen by the surgeon is small and the cases mentioned are all that we have operated on. Of the 10 patients that underwent operation 3 died. In the first 2 cases death was undoubtedly due to inadequate operation —i.e., gastrojejunostomy with or without occlusion of the pylorus and first stage of the duodenum. In the third case death was due to failure to evacuate the stomach contents. In the other cases, we believe the successful result was attributable to conservative methods of treatment along the lines indicated.

At the same time it must be added that not all the cases seen with surgical treatment in view were subjected to operation. Some had what was supposed to have been a severe hæmorrhage, but when they were seen the pulse-rate did not indicate even the necessity of a blood transfusion; others were given a blood transfusion and no further interference was required. Two patients in the latter category have successfully undergone partial gastrectomy within the past six months. A few, however, it must be admitted, were seen in a moribund condition when surgery was out of the question. It is because of cases like these that we feel there should be earlier coöperation between surgeon and physician.

Finally we wish to stress the following observations. (1) The institution of the blood-drip transfusion is a striking advance in the treatment of severe hæmatemesis. (2) Except by specialists in that particular form of surgery, gastrectomy (other than perhaps a local excision of the ulcer in certain cases) and duodenectomy should not be attempted as immediate treatment for bleeding from chronic peptic ulcer. (3) We believe that gastrojejunostomy is of little material assistance in these cases, except when the duodenum is fibrosed and has to be occluded. When operation is decided upon it should follow the lines we have indicated.

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TREATMENT OF GLOMERULONEPHRITIS BY ANTIGEN

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FOLLOWING the work of Volhard and Fahr on Bright's disease,[1] modern opinion has come to regard acute glomerulonephritis as the result of a local and general vascular reaction of an allergic nature. The general œdema and rise of blood pressure are referred to a widespread capillaritis with some vascular spasm, while the renal effects result from similar lesions in the glomeruli, which are particularly susceptible on account of their special vascular arrangements.

Acute glomerulonephritis usually arises as a late complication of an infection in the post-febrile stage (consecutive nephritis). Its frequent association with scarlet fever and tonsillitis has led some authors to assume that the causative antecedent infection is always streptococcal. In the late war, however, there was evidence that trench nephritis was dependent on trench fever (*Rickettsia quintana* infection),[2 3] while in a previous communication I described cases commonly seen in Egypt that appeared due to infection of the kidneys by bacilli derived from intestinal lesions.[4]

VACCINE TREATMENT OF BACILLARY NEPHRITIS

Bacillary infection of the kidneys may produce a variety of lesions, ranging from the pyæmic type described by Manson-Bahr and Enright[5] to a simple bacilluria. Many cases in Egypt present the picture of an acute glomerulonephritis with large numbers of bacilli in the urine. These usually respond in a striking manner to the administration of vaccine in appropriate doses. The following case is an example.

CASE 1.—A boy, aged 10, stated that five weeks previously he had suffered from a septic wound on his foot, and for the last fortnight had noticed a gradually increasing œdema of his whole body. His tonsils were enlarged and there was general œdema with some ascites; the blood pressure was elevated. The urine was blood-stained and contained numerous bacilli and pus cells as well as epithelial and blood casts. A catheter specimen

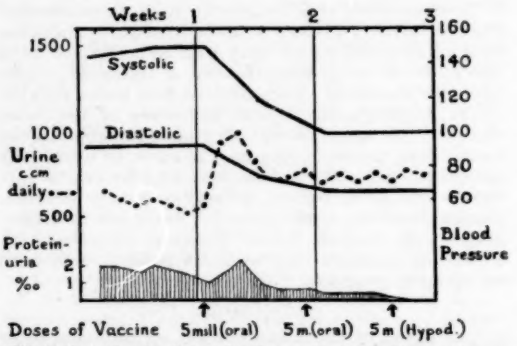

FIG. 1 (Case 1).—In this and subsequent charts the continuous lines represent the blood pressure (systolic and diastolic), the interrupted line the amount of urine excreted daily, and the shaded portions the degree of proteinuria.

gave a pure and profuse growth of coliform bacilli from which a vaccine was prepared. A dose of this vaccine by mouth (5 millions) provoked a focal reaction marked by polyuria and a temporary increase of proteinuria. The blood pressure quickly fell to normal, the œdema disappeared, and the proteinuria was reduced to a trace within a week. Repetitions of the original dose of vaccine by mouth and by hypodermic injection had no obvious further effect, the symptoms having already almost disappeared (Fig. 1).

The results of vaccine therapy founded on recent and past [4] experience may be shortly summarised as follows: (*a*) the effective dose is quite small in acute cases, the kidneys being very sensitive to the vaccine; (*b*) the response is almost immediate; and (*c*) oral administration is as effective as hypodermic.

GLOMERULONEPHRITIS OF UNCERTAIN ORIGIN

Consideration of the results obtainable by the use of vaccine in cases of bacillary origin led to the investigation of further possibilities. The rapid action of the vaccine when given by mouth suggested that the active constituent (antigen) was readily dissolved and entered the circulation in solution. The prompt effect of small doses favoured the idea that the process was rather a desensitisation than an immunisation.

In cases of bacillary glomerulonephritis the causative bacilli which contained an effective antigen (allergen) were found excreted in the urine. It was possible that in non-bacillary cases due to antecedent infection by other organisms (streptococci, &c.) a soluble product of therapeutic worth might also be found excreted by the kidneys. Trial of such a product could be made in cases of acute glomerulonephritis when the urine was sterile or when the results of culture were untrustworthy on account of a complicating cystitis, &c.

Preparation of antigen.—Since the amount of this hypothetical antigen in the urine was unknown, a simple method of extraction was employed which would avoid loss, though not yielding anything approaching a pure product. Bacterial antigens in solution are readily adsorbed to a precipitate of protein, owing to their colloidal nature; hence any serum globulin precipitated from the urine would contain the product sought for.

The urine from a case of glomerulonephritis was collected with aseptic precautions and centrifuged in sterile tubes to clear it as far as possible of suspended matter. Filtration was not used, because small quantities of antigen are entirely adsorbed by the filter material. The cleared urine was put in a series of four sterile centrifuge tubes of 15 c.cm. capacity, 8 c.cm. in each; to every tube a saturated solution of ammonium sulphate was added until slight clouding occurred from commencing precipitation of globulin. From 4 to 5 c.cm. sufficed, depending on the amount of globulin present; the exact quantity was determined for one tube and this added to the others, the contents of each tube being thoroughly mixed. The resulting precipitate was collected in a compact deposit by centrifuging for 15 minutes; the tubes were then emptied of fluid by inversion and left to drain aslant for a few minutes; a little sterile water was used to remove traces from the open ends of the tubes. The precipitate was redissolved in carbol-saline, so that 1 c.cm. of the solution corresponded to 5 c.cm. of the urine. It was stored for two or three days in sterile rubber-capped vaccine bottle to secure sterility. A diluted extract was also made, of equal volume to the urine, from the strong solution. For urines that contained insufficient globulin or were protein-free (experimental cases) the necessary globulin had to be supplied; one drop of normal human serum to each 3 c.cm. of urine was sufficient.

The reaction of the extract was slightly acid from traces of ammonium sulphate; it contained some suspended matter and a small proportion of urea. The product thus obtained proved unirritating; no local reaction followed subcutaneous injection.

TREATMENT BY ANTIGEN

The therapeutic effect of this product is illustrated by the case-histories and charts below. The dose

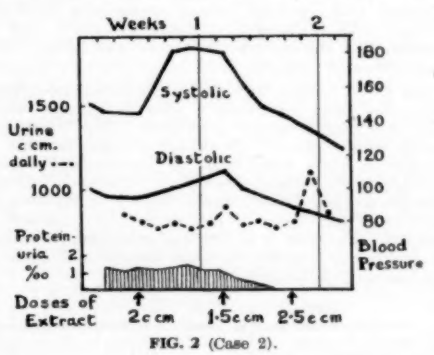

FIG. 2 (Case 2).

of the urinary extract is given as its equivalent in urine.

CASE 2.—A man, aged 25, was admitted for general œdema with hæmaturia of 18 days' duration. There was no history of antecedent illness; the Wassermann reaction was negative. Blood-urea 40 mg. per 100 c.cm. The urine contained cellular casts and free erythrocytes; no bacilli and 1½ parts of albumin per 1000. Extra serum was added to the cleared urine to obtain a sufficient precipitate of globulin. It will be seen from Fig. 2 that the first dose of extract (equivalent to 2 c.cm. urine) was too large and provoked a rise of blood pressure. The second was smaller and was followed by an immediate fall of the blood pressure with a diminution of the œdema and proteinuria. A slight diuresis was provoked by a third dose, after which no signs of disease remained.

CASE 3.—A man of 40 was admitted for increasing œdema that had appeared 2 or 3 weeks before. He gave

a previous history of furunculosis; Wassermann reaction negative. Blood-urea 50 mg. per 100 c.cm. The urine contained granular and hyaline casts with an excess of

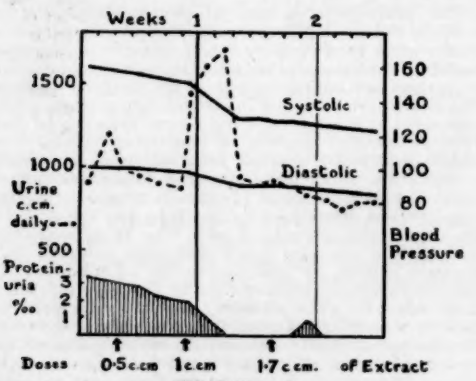

FIG. 3 (Case 3).

erythrocytes; no organisms. Treatment was begun with small doses of the adsorbate preparation with the effect shown in Fig. 3.

In chronic cases of glomerulonephritis the effect of this treatment is often striking, though the albuminuria may remain little affected. But when the renal disease has advanced to the stage of contracted kidney, little or no benefit results.

CASE 4.—A male of 25 was admitted for œdema of varying degree that had been present for four years. The Wassermann reaction was negative. The blood pressure was high and the left ventricle hypertrophied, but there were no changes in the fundi. The urine contained very many casts, hyaline and granular, with some included cells. Blood-urea 70 mg. per 100 c.cm. Treatment with the urine extract produced a fall of blood pressure with increased urinary excretion and disappearance of the œdema, but there was little effect on the proteinuria (Fig. 4).

CASE 5.—A female, aged 28, had suffered from general dropsy one year previously; this had disappeared to return one month before admission. The Wassermann reaction was negative; the blood pressure normal. On examination there were signs of hepatic and intestinal infestation with *Bilharzia mansoni*. The urine contained numerous epithelial and granular casts with erythrocytes; bacilli were not obvious but a coliform bacillus was recovered on culture of a catheter specimen. Treatment with extract in progressive doses started a diuresis with disappearance of the œdema (Fig. 5).

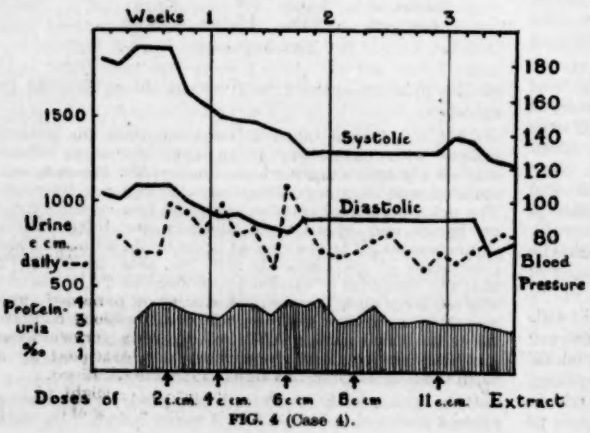

FIG. 4 (Case 4).

Treatment by injection of urine extract appeared of distinct value in acute glomerulonephritis and for exacerbations or relapses in chronic active forms of the disease. It is seemingly useless in the degenerative stage when fibrosis is advancing. It may be worth trial in some cases of nephrosis when a chronic or recurrent infection—often pneumococcal[6]—may be present.

In employing this treatment it is recommended that the urinary extract be made soon after admission of a patient, but its use may well be postponed until the effect of rest, warmth, and a restricted intake has been observed. The effective dose varies roughly in an inverse ratio to the acuteness of the renal disease. In acute cases of glomerulonephritis an initial dose corresponding to 0·25 c.cm. of urine may be tried; generally a first dose of 0·5 c.cm. is safe unless the urine output is very seriously reduced. Larger doses are usually needed for cases in a later stage with normal blood pressure. Injections in increasing amounts may be given twice a week until an effect is produced.

DISCUSSION

The effect of the urine extract on ordinary cases of glomerulonephritis closely corresponds with the

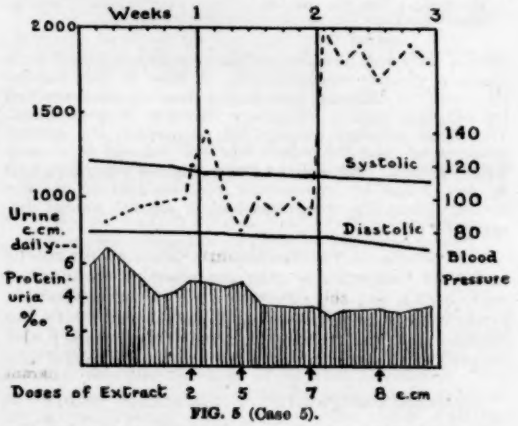

FIG. 5 (Case 5).

results of vaccine therapy in cases of bacillary origin. Their mode of action appears identical. It therefore appears that the urine extract contains a substance of the nature of an antigen.

No evidence of a "physiological" effect of the vaccines or extracts was obtained. Tests on patients without nephritis showed that neither preparation, even in large doses, had any effect on renal function or on the blood pressure. Considerable doses of an autogenous urine extract were tried on a case of primary hypertension (non-renal) in a young woman of 19, but were useless.

The results of this investigation support the theory that hæmorrhagic glomerulonephritis with œdema and raised blood pressure is of an allergic nature, since it is favourably influenced by treatment aiming at desensitisation and immunisation. In cases of bacillary origin there is evidence that a repetition of infection from the intestine, as occurs in mild cases of *Bilharzia mansoni* infestation, may precipitate an attack of glomerulonephritis. On the other hand, cases consecutive to scarlet fever and tonsillitis

can hardly be explained by a theory of reinfection. The most plausible explanation lies in the association of acute nephritis with exposure to cold, for which there is abundant clinical evidence. An acute glomerulonephritis may develop in a few hours after a severe chilling in a patient who is unaware of a previous infection. I have read of a certain hospital bed in which scarlatinal patients invariably developed nephritis; it stood in a direct draught. Hospital sisters informed me that boys were more liable than girls to develop nephritis after scarlet fever, since they were apt to get up at night and run about scantily clothed—unless kept under unremitting supervision. The winter prevalence of trench nephritis and its relation to cold and exposure were evident in the Great War.

Since an allergic reaction depends on the exposure of a sensitised individual or tissue to the specific allergen, the effect of exposure to cold is probably to bring about some liberation of allergen. It may be similar to the dissociation of an antibody-antigen combination that occurs when a neutralised mixture of diphtheria toxin-antitoxin is exposed to a low temperature. Under these circumstances freed allergen (antigen) reacts with the sensitised small vessels, particularly in the glomeruli during excretion. There appears to be a special proclivity of small vessels to be involved in an allergic reaction, and it is interesting to find corroborative evidence in the distribution of amyloid deposits which follow prolonged struggles to obtain immunity.

SUMMARY

A substance having an antigenic effect is present in the urine of cases of acute and subacute glomerulonephritis.

Treatment by injection of an autogenous urinary extract appears of distinct value for non-resolving cases of acute glomerulonephritis and for exacerbations or relapses in chronic active forms of the disease. It seems to be useless in the degenerative stage when fibrosis is advancing.

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CHRONIC LEUCOPENIC LYMPHADENOSIS

COMPLICATED BY TUBERCULOSIS

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THE patient was a well-developed man, aged 54 at the time of his death on Sept. 14th, 1936, who had been intermittently under observation at the German Hospital since his first admission in July, 1934. The history given on admission was that during the previous seven years he had often felt weak and for two years he had looked pale.

The account up to Dec. 13th, 1935, when we showed the patient at the clinical section of the Royal Society of Medicine[1] may be summed up as follows:

Under observation since July, 1934, his condition has varied a little from time to time. He has been treated with arsenic, iron, and a liver diet or liver extract (Hepatopson), and in September, 1934, his hæmorrhoids were operated on. There has been a varying splenomegaly (spleen felt three fingers-breadth below the costal margin on Nov. 14th, 1935) and slight enlargement of the liver, but practically none of the superficial lymphatic glands. Occasionally there has been a purpuric petechial eruption. On one or two occasions the capillary resistance (Rumpel-Leede) test gave a positive result. Nothing abnormal by examination of the eyes, the thoracic organs, and urine. Negative Wassermann reaction. Negative direct and indirect Hijmans van den Bergh reactions.

On Nov. 14th the patient was up in the ward and had decidedly less anæmia than he had a year ago and when he first came under observation, but there was enlargement of the spleen and (slight) of the liver, though not of the superficial lymph glands. Blood count (Nov. 14th, 1935): hæmoglobin, 78 per cent.; erythrocytes, 3,400,000; colour-index, 1·15; leucocytes, 2500 (eosinophils 1 per cent., myelocytes 1 per cent., polymorphonuclear neutrophils 8 per cent., lymphocytes 90 per cent.); megalocytosis; no marked poikilocytosis, anisocytosis, or polychromasia; recticulocytes, about normal proportion; thrombocytes, 120,000 per c.mm. of blood. In this blood count the absolute lymphocyte count is 2250 per c.mm. of blood. The maximum normal average is said to be 2000, and in this case in fourteen blood counts between July 24th, 1934, and July 29th, 1935, the absolute lymphocyte count varied from 920 to 5376, the average being 2594; the absolute count of all the other white cells combined varied from 155 to 1421, the average being 654. On the occasion of one of these blood counts the patient's temperature was subfebrile, but on the other occasions the temperature was normal.

It should be remarked that in July and August of 1934 there were a few megaloblasts and normoblasts in the blood counts, as well as slight poikilocytosis and anisocytosis. Nevertheless, in spite of the improvement with regard to the anæmia, we believe the case to be one of aleukæmic lymphadenosis.

Sternal puncture (Nov. 23rd) for microscopical examination of bone-marrow cells by Henning's method[2] gave us diluted blood containing bone-marrow elements. Besides fairly normal-looking erythrocytes there were numerous nucleated red cells, mostly normoblasts, many of them with strongly basophil cytoplasm; most of the white cells were lymphocytes, giving a negative oxydase reaction, but there were also fairly numerous cells of the granulocyte series giving a positive oxydase reaction, including polymorphonuclear neutrophils, metamyelocytes, and myelocytes. There were hardly any eosinophils or mast-cells. We saw no megakaryocytes, but there were a few little clumps of thrombocytes. A differential count of 100 of the white cells gave: myeloblasts, 1 per cent.; myelocytes, 1 per cent.; metamyelocytes, 2 per cent.; polymorphonuclear neutrophils, 2 per cent.; lymphocytes, 94 per cent. During this count 51 nucleated red cells were seen, of which 14 were pro-erythroblasts (with strongly basophil cytoplasm), 8 were macroblasts, and 29 were normoblasts. The blood count on Dec. 11th, 1935, after taking two one-grain nuclein Tabloids (B. W. & Co.), thrice daily, for eighteen days, was: hæmoglobin, 70 per cent.; erythrocytes, 3,480,000; leucocytes, 3200 (83 per cent. lymphocytes).

PROGRESS OF CASE AFTER DECEMBER, 1935

The patient left the hospital on Dec. 23rd, 1935, but continued under out-patient treatment.

In May, 1936, his general condition remained much the same. He was able to walk about. Blood count on May 9th, 1936: hæmoglobin, 73 per cent.; erythrocytes, 3,780,000; colour-index, 0·96; leucocytes, 4100 (eosinophils 1 per cent., polymorphonuclear neutrophils 12 per cent., lymphocytes 87 per cent.); anisocytosis; slight poikilocytosis. No thrombocyte count was made on that occasion,

but on March 28th it was 80,000, and on April 15th it was 104,000 per c.mm. of blood. In May the spleen could just be felt below the ribs, and there was slight enlargement of the inguinal lymph glands.

On August 29th, 1936, he was readmitted to hospital with some dullness to percussion over the base of the left lung, evidently due to pleural effusion. The lower edge of the liver reached down to the umbilical level. The spleen could be felt just below the costal margin on inspiration. There was slight enlargement of the left axillary lymph glands.

After readmission there was moderate pyrexia (99°–102·2° F.), pulse 86 to 122 per minute, respiration about 30. Brachial blood pressure 100/80 mm. Hg. The blood sedimentation-rate was greatly increased (13 minutes instead of the normal of over an hour by the method employed). Blood count (August 30th): hæmoglobin, 70 per cent.; erythrocytes, 4,000,000; colour-index, 0·9; leucocytes, 2100 (eosinophils 1 per cent., polymorphonuclear neutrophils 21 per cent., lymphocytes 77 per cent., monocytes 1 per cent.); slight megalocytosis; poikilocytosis; polychromasia; one nucleated red cell (normoblast) seen during the count of 100 leucocytes. The urine showed a trace of albumin, and a very few tube-casts and erythrocytes in the centrifuge sediment. A radiogram of the thorax showed pleural effusion on the right side and some enlarged hilum shadowing on both sides, especially on the right side.

The pleural effusion was tapped on August 31st, Sept. 1st, and Sept. 7th, and on each occasion slightly sanguineous pleural fluid (450–1750 c.cm.) of specific gravity 1015, was withdrawn. The paracentesis of Sept. 1st was followed in about 12 hours by an urticarial eruption, which disappeared in a few days.[3] The pyrexia continued, and the patient became gradually weaker and died on Sept. 14th.

NECROPSY AND MICROSCOPICAL EXAMINATION

The heart (weight 260 grammes) showed nothing special. There were enlarged hilum glands on both sides, especially the right. The left pleura was adherent, and there was a considerable pleural effusion on the right side. The pleura over the ribs on the right side was thickly studded with tubercle-like nodules. The spleen was enlarged (1050 g.); dark red on section, with very obvious trabeculæ; scattered minute white spots on the cut surface. The liver was enlarged (2620 g.); there were many little pale nodules beneath the capsule, and some still smaller ones were seen on section of the liver substance. The kidneys (weight 350 g. together), pancreas, suprarenal glands, stomach, and intestines showed nothing special. At the hilum of the liver there were enlarged lymph glands (up to the size of a hen's egg), which on section showed a mottled surface, red with little white nodules and patches. There were some similar enlarged paraortic lymph glands in the abdomen; and what seemed to be a similar gland stuffed with tubercle-like nodules was removed from between the parietal pleura and the diaphragm in the right costo-phrenic angle. The bone-marrow at the middle of the right femur was milky-red in colour; the microscopic examination of films showed that the white cells were nearly all lymphocytes (96 per cent. according to a differential count); by the oxydase test 98 per cent. of the white cells gave a negative reaction; only six nucleated red cells (4 normoblasts and 2 megaloblasts) were seen during a count of 100 white cells.

Microscopic examination of the liver showed well-marked interacinous lymphocytic infiltration, as seen in typical cases of lymphatic leukæmia (lymphadenosis). This was best marked in the little pale nodules. The spleen showed great irregular enlargement of the Malpighian corpuscles by the growth of lymphocyte-like cells, which obliterated all trace of the germinal centres of Fleming. Some of these lymphocytic patches doubtless corresponded to the minute white spots seen by naked-eye inspection of the freshly cut surface of the spleen. Both the liver and spleen gave a moderate Prussian blue reaction. The tubercles in the right pleura and the tubercle-like nodules in the lymph glands were necrotic and apparently genuine tuberculous lesions, though only very few typical giant cells and no tubercle bacilli were detected. A moderately enlarged lymphatic gland from the right groin also showed tuberculous structure. A section of the bone-marrow from the middle of the right femur proved that it still contained much fat, but was permeated with white cells, mostly lymphocyte-like.

It may be noted here that the patient had several little nodules on his face, varying in size from a pin's head to a split-pea. He also had a very noticeable nodule at the tip of his tongue of about the size of a split-pea. According to the patient all these nodules had appeared during the last years of his life. Four of the facial nodules and the nodule from the tip of the tongue were kindly examined microscopically by Dr. W. Freudenthal, who found all the facial nodules to be examples of nævus mollis—with typical so-called "nævus cells"; the nodule from the tongue was of fibrous structure, a kind of "fibromatous nævus." These nodules had therefore nothing to do with the patient's lymphadenosis.

REMARKS

In this remarkable case of chronic lymphadenosis, the permanence of the leucopenia and granulocytopenia was a striking clinical feature. In the 27 differential leucocyte counts taken at the hospital during the patient's life the average percentage of lymphocytes was 81 per cent., whilst the total leucocyte count averaged 3407.

After the patient's death the typical interacinous lymphocytic infiltration of the liver seen by microscopic examination, as in cases of lymphatic leukæmia, was by itself sufficient to prove the correctness of the lymphadenosis explanation[4] of the clinical features. But the miliary tuberculous process at the end was not suspected before the post-mortem examination.

In an article on the Relations of Pulmonary Tuberculosis to Other Diseases in 1904, one of us[5] wrote: "Several cases have been published illustrating the association of tuberculosis with leukæmia—mostly cases of lymphatic leukæmia.[6] It has been observed that after tuberculous infection there is often retrogression in the size of the spleen and lymphatic glands with diminution in the number of the white cells in the blood; for that reason Prof. H. Quincke of Kiel suggested the therapeutic employment of tuberculin in leukæmia. Retrogression of leukæmia symptoms has also been observed as a result of erysipelas and other microbic invasions. Susmann[7] suggested that the excess of nucleo-albumin and the increased phagocytic power of the blood in leukæmic patients might exercise an antagonistic action in regard to tubercle. It is not certain, however, that leukæmia is really antagonistic to tuberculosis, though tuberculosis seems to check the progress and even to cause retrogression of leukæmia."

Since 1904 there have been a number of papers on the relation of leukæmia and tuberculosis, amongst which may be mentioned those by Émile-Weil and Coste,[8] Quentin,[9] and Godfried Holler.[10] In our present case one may suggest that the presence of some latent, quiescent tuberculous focus tended to make the lymphadenosis one of the aleukæmic kind and hindered its active progress, though afterwards an acute miliary resuscitation of the tuberculosis process caused the death of the patient.

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CARDIOVASCULAR EFFECTS OF BENZEDRINE

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ASSISTANT PHYSICIAN TO THE HOSPITAL

BENZEDRINE was first employed clinically in the treatment of narcolepsy, and success was reported by Prinzmetal and Bloomberg,[1] who treated 9 cases, and Ulrich, Trapp, and Vigdoff,[2] who treated 6. More recently it has been administered for other conditions, including gastro-intestinal spasm. The first paper to be published in this country on its use in psychiatry was by Peoples and Guttmann,[3] and it led to our undertaking an investigation of the drug at the Cassel Hospital. This will form the subject of a future report. Meanwhile it has seemed desirable to record the phenomena observed in the cases described below.

OBSERVATIONS

The patients selected for the study were mild neurotics and psychotics but were physically fit. The drug was given in amounts ranging from 10 to 30 mg. Preliminary readings of the pulse and blood pressure in both standing and lying positions were made at 9 A.M. immediately before administration of the drug. Similar readings were taken throughout the day and the psychic state carefully recorded during the total period of observation. A certain number of normal subjects were also investigated, making a total (including patients) of 20. In addition control tests were carried out using tablets of a neutral substance (calcium lactate) identical in appearance with the benzedrine tablets so that the patient did not know when he was getting the drug. Pallor, flushing, palpitation, and both increases and decreases in the pulse-rate and blood pressure were noticed in some of the patients receiving benzedrine, and in the six cases recorded below the effects included collapse, multiple extrasystoles, heart-block, and pain in the chest radiating into the left arm.

CASE 1.—Male, aged 35; weight 14 st. 4 lb. After 20 mg. sustained a maximum blood-pressure change of from 125/80 to 138/90 in 4 hours and a maximum pulse-rate change from 115 to 88 in 7 hours in the standing position. Fifteen hours after administration a sharp shooting pain in the left precordium was felt.

CASE 2.—Male aged 35; weight 10 st. 10 lb. After 20 mg. sustained a maximum blood-pressure change of from 125/85 to 153/94 and pulse from 85 to 115 in 4 hours in the lying position. After 1½ hours pain was felt in the left chest and after 10 hours a pain in the left posterior axillary region.

CASE 3.—Female, aged 20; weight 7 st. 6 lb. After 20 mg. sustained a maximum change in blood pressure from 122/75 to 150/94 in 7½ hours and a pulse change from 78 to 104 in 4 hours in the lying position. After 7 hours this patient complained of a "funny feeling" in the chest not quite amounting to pain.

CASE 4.—Male, aged 24; weight 9 st. 6 lb. After 20 mg. sustained a maximum change in blood pressure lying from 140/64 to 148/100 in 7½ hours and a pulse change 84 to 108 in 6 hours. After 10 hours he developed pain in his left chest and pain down his left arm with exercise. This patient had been hypochondriacal for some time, complaining of tachycardia, pain in his abdomen, chest, legs, and arms, but the pain in his left arm was more severe after the test.

CASE 5.—Female, aged 56; weight 7 st. Complained of feeling "rocky and dizzy" and was nauseated 1 hour after 20 mg. The maximum blood-pressure change was from 120/85 to 95/80 and of pulse from 104 to 96 in 2½ hours in the standing position. After 5½ hours occasional extrasystoles were noted.

CASE 6.—Male, aged 49; weight 12 st. 4 lb. This case was diagnosed as one of involutional depression with paranoid ideas. Benzedrine (30 mg.) was administered as described, and there was a maximum rise in systolic blood pressure (lying) 4 hours after administration, rising from 120 mm. to 150 mm. This was accompanied by a parallel rise in systolic blood pressure (standing) from 130 mm. to 145 mm. during the same interval. The diastolic (standing) also reached its maximum at the same time (90–100), but the lying diastolic maximum (65–95) 1½ hours earlier. The pulse (standing and lying) did not reach its maximum till 7½ hours (60–100 and 65–80 respectively). The psychic changes will be noted in a later report. The patient complained of "slight pain" in the left side of his chest 45 minutes after the drug. He also noted a singing in his ears. Two and a half hours later he was a little flushed, breathless, and said he felt as if he had "taken rather a lot of exertion." At 6.30 P.M. he said he felt "bilious," complained of nausea and loss of appetite. He continued like this till 8.10 P.M. when he suddenly "collapsed." He was seen and found to be cold and clammy with cyanosed lips. His pulse was slow, soft, and collapsible and every fourth beat was dropped. At this time he vomited. He was given an injection of camphor in ether. At 9.15 P.M. his pulse was still slow (56) and examination showed a 1/4 heart-block with an occasional extrasystole. The first sound at his apex was intensified, but no bruits were heard. Blood pressure 120/76. The next morning at 9.30 P.M. his pulse-rate was still 56. His apex-beat was invisible and impalpable. The sounds were faint at the apex and inaudible at the base. The nausea had ceased and he felt much better. Blood pressure 114/68. 4.45 P.M. the same day his colour had returned and although his pulse was still slow he was much better. Blood pressure 130/80. The patient's cardiovascular system on admission showed nothing abnormal and there was nothing to indicate the likelihood of this dénouement. Observation during the day showed the effect of the drug apparently wearing off as evidenced by diminution of the tinnitus, &c.

COMMENT

We can find no record elsewhere of such severe cardiovascular effects induced by benzedrine.

Prinzmetal and Bloomberg [1] gave from 10 to 80 mg. of benzedrine daily to 9 patients with narcolepsy and mention no ill effects other than "psychic troubles" in two patients.

Peoples and Guttmann,[3] giving from 10 to 80 mg. to 25 persons, mention that the usual result was a rise of blood pressure and of pulse-rate. No other cardiovascular phenomena were noted.

Myerson and Ritvo [4] report that in 4 out of 200 patients given doses of from 10 to 40 mg. of benzedrine unpleasant "chilly sensations, flushing, diarrhœa and general malaise" occurred. In only one of the patients was there a severe reaction (chills, nausea, collapse, restlessness, and diarrhœa) and as this reaction did not occur for several hours after the benzedrine

(*References continued from previous page*)

4. Cf. Weber and Schlüter: Significance of Systematised Interlobular Infiltration of the Liver with Lymphocyte-like Cells, THE LANCET, 1936, i., 1115.
5. Weber, F. P.: Ibid., 1904, i., 924.
6. See W. J. Susmann's table of cases, Practitioner, 1903, lxi., 536; Neutra, W.: Zeits. f. Heilkunde, 1903, xxiv., 349 (with bibliography); Quincke, H.: Deut. Arch. f. Klin. Med., 1902, lxxiv., 445; Carpenter, G.: Med. Press, 1902, cxxvi., 79.
7. Susmann: Loc. cit. (ref. 6).
8. Émile-Weil, P., and Coste: Presse méd., 1921, xxix., 929.
9. Quentin: Bull. et. mém. Soc. méd. des hôp. de Paris, 1924, 3rd Ser., xlviii., 31.
10. Holler, G.: Klin. Woch., 1931, x., 1663.

was given, they doubted that it was due to the effect of the drug. Owing to the effect of benzedrine on blood pressure they advise caution in its use in severe cardiac disease, but state that "on the whole we believe that the drug is non-toxic and in the doses recommended may be used safely wherever desired. . . . No idiosyncrasy to the drug in single doses except in some cases of mental disease." In this same article they also mention that Myerson and other workers have administered similar doses to a series of several hundred patients for other purposes without observing any ill effects.

Davidoff [5] gave 10 to 30 mg. benzedrine to 30 self-absorbed patients. He states that dosage of 10 to 20 mg. is relatively non-toxic except in patients with cardiac or hypertensive signs. In 2 of his 30 cases administration had to be discontinued due to a fall in blood pressure; one patient had a cardiac condition and the other was neurosyphilitic.

Myerson et al.[6] reporting the results of administering 9 to 50 mg. of benzedrine subcutaneously to 18 mental patients state that "slight cardiac arrythmia appeared in four cases. This was either of the sinus type or due to extrasystoles." Their intensive investigations during which they established a rise in blood pressure, especially systolic, a fall in pulse-rate, a rise in spinal fluid pressure, and a variable increase in the red and white blood counts (the latter being chiefly a polymorphonuclear rise) without change in cell volume or hæmoglobin content, demonstrate marked effects on the cardiovascular system.

Myerson [7] reports the effect of doses of about 30 mg. daily on mood and fatigue in 9 patients. In 2 patients who were paranoid the drug had to be stopped due to the manner in which they expressed their hostile feelings after its administration. In this article he makes no mention of untoward cardiac complications. Ulrich et al.[2] mention no cardiac complications during the administration of 20 to 50 mg. to 6 cases of narcolepsy. Guttmann [8] discussing the effect of benzedrine on depressive states mentions no alarming cardiovascular effects.

This report is made: (1) because no case similar to No. 6 has so far been reported; (2) because we believe that, until more precise knowledge of the cardiological effects is obtained, caution should be exercised in the administration of doses of 10–20 mg. or more, particularly in elderly subjects; and (3) because detailed cardiological investigation of the effects of the drug appears desirable.

We would like to express our thanks to the distributors, Messrs. Menley and James Ltd., for kindly furnishing us with a generous supply of the drug to carry on this and other work.

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PRINCESS LOUISE HOSPITAL, KENSINGTON.—A dinner in support of this children's hospital was held at Claridge's on Dec. 8th. An appeal is being made for £30,000 to complete the building scheme and to liquidate the debt. Admissions have to be refused because of lack of room, and many nurses must live in what should be the fourth ward of the hospital.

ROYAL NORTHERN HOSPITAL, LONDON.—The foundation-stone of the Beecham Laboratories, an extension to this hospital, was laid on Dec. 8th by Mr. Philip Hill. Beecham's Pills Ltd. has provided the hospital with a pathological department at a cost of £12,500 and is paying a sum of £1000 a year towards its maintenance. The hospital is appealing for £350,000 to provide other additional departments.

Clinical and Laboratory Notes

A NOTE ON PAGET'S DISEASE OF THE NIPPLE *

BY SIR LENTHAL CHEATLE, K.C.B., C.V.O., F.R.C.S. Eng.

CONSULTING SURGEON, KING'S COLLEGE HOSPITAL

WHEN Sir James Paget described Paget's Disease of the Nipple, all he really did was to report certain clinical signs on the nipple which he said were commonly associated with carcinoma of the breast. All this was, and is, perfectly true. I need not state those signs. Since his day four separate conditions have been described which are associated with the classical signs of the disease.

The *first* is that Muir and Jacobaeus have pointed out that the commonest conditions to give rise to those superficial signs is really carcinoma beginning in an upper duct, and which has spread into and among the epidermic cells on the surface of the nipple. In 15 out of my 18 cases this is perfectly true. To understand Muir's opinion it is essential to realise that carcinoma cells can spread in to the epidermis of the nipple without transgressing its natural boundaries.

The *second* condition is the formation of the so-called Paget's cells which develop from the basal epithelial cells of the epidermis itself. These cells are seen in 12 out of my 18 cases. In one of these cases there was no carcinoma in the upper ducts and only these Paget's cells were visible in the epidermis of the nipple. This condition appears to be degenerative in type. The concern—if any—with the ætiology of carcinoma is not at all clear at the present moment.

These two conditions are particularly interesting because of the fact that in each there occurs, in the deeper parts of the breasts, very important neoplastic epithelial changes which have no morphological continuity with either the carcinoma of the upper duct or with the formation of only Paget's cells in the epidermis of the nipple. The presence of Paget's cells alone in the epidermis of the nipple associated with the subjacent neoplastic changes beneath is a fact that seems to indicate a mutual association between them. These neoplastic epithelial changes in the depth of the breast may be:—

(*a*) Papillomatous formations together with non-papillomatous formations in the more terminal ducts and their acini which distend these structures, and although they look malignant, they do not transgress normal boundaries.

(*b*) The development of highly malignant carcinomata. The carcinoma in the upper ducts which give rise to the signs of Paget's disease are not so malignant.

The *third* condition which causes the clinical signs of Paget's disease is the spread of carcinoma deposits into the epidermis of the nipple. The deposits are secondary to a primary carcinoma originating deep in the breast.

The *fourth* state is the carcinoma that begins in the sebaceous glands on the surface of the nipple. I have only one such case and no Paget's cells were present, yet it exhibited the classical clinical signs.

It appears from my observations that the classical clinical signs that Sir James Paget described are

* Communicated to the Harley Medical Society on Nov. 19th, 1936.

caused by more than one condition. It does not appear to me correct to limit the description of Paget's disease of the nipple only to those states in which the so-called "Paget's cells" are present, although in 12 of my 18 cases they existed.

The matter would be simplified if the clinical signs were regarded as merely of clinical importance and their actual cause determined on the merits of each particular case.

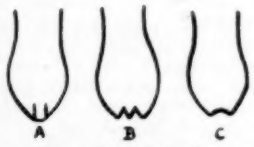
A MINOR OPERATION FOR PHIMOSIS

By Mary Barton, M.B. Lond.

The following details may possibly be of interest to some who are in general practice and who undertake midwifery and the care of infants.

For some years I have been struck by the large numbers of male babies born with a prepuce so tight that although micturition can be normally performed it is quite impossible to draw the prepuce back over the glans, or at times even to expose a portion of the glans. At the same time I have always felt that circumcision should not be performed unless absolutely necessary, and for the past three years I have adopted the following alternative which has been so successful that I have not had to resort to circumcision in a single case where the infant has been under my care from birth.

On the 5th day, if the baby is normal and healthy, I cleanse the parts with soap and water and wipe the prepuce with cotton-wool soaked in surgical spirit. I then draw the prepuce forward with a pair of dissecting forceps and with a pair of sharp blunt-ended scissors I make two small cuts about ¼ in. long through the mucodermal junction in the long axis of the penis and ⅛ in. on either side of the dorsal midline. After the cuts have been made I gently ease the mucous surface of the prepuce from the glans with a blunt-ended probe dipped in acriflavine oil, and it is then possible to draw the prepuce right back behind the glans. The bleeding is very slight and no stitching is required.



The method of incision: C shows the effect after healing.

Each following day during the healing process the prepuce is drawn back and the cuts are swabbed with a little acriflavine oil. This prevents the two surfaces of each cut from adhering together and the cuts heal across horizontally, thus widening the mucodermal circumference of the prepuce by about half an inch. By the 14th day healing is complete and the mother is instructed to draw the prepuce back once daily when bathing the child. At the end of 3 weeks it is impossible to detect any signs of surgical interference, the prepuce slips back easily, and over a period of 3 years none of the infants so treated has shown any sign of requiring circumcision.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

At the meeting on Dec. 14th, with Sir William Willcox in the chair, a discussion on the

Treatment of Hæmatemesis

was introduced by Dr. H. Letheby Tidy. He dealt with hæmatemesis due to peptic ulcers, taking the three stages—immediate treatment, treatment in the first few days until the case became one of ulcer, and the treatment of recurrent hæmorrhages. Statistics showed that about 25 per cent. of ulcer cases had some degree of hæmatemesis, much of it only of a trivial type. Taking ulcers as a whole, and even hæmatemesis as a whole, the fatalities were few, and until recently this had obscured the importance of the subject. Taking as a criterion of seriousness the cases admitted to hospital for that symptom, the mortality was 15–20 per cent. Another criterion was a hæmoglobin less than 30 per cent. In 30 cases of hæmatemesis admitted to the medical wards of St. Thomas's Hospital in six years, there were 5 deaths—a mortality-rate of 17 per cent. These fatal cases he related in detail, remarking that in 3 the death was due to another major morbid condition that would have interfered with any form of treatment. There were 24 out of 27 cases that were correctly judged to be medical cases, and they recovered, the other 3 being transferred to the surgeon's care. If the position were taken up that all cases of chronic ulcer must be operated upon if they could be obtained within 48 hours of the onset, 15 of 16 cases would have been operated upon unnecessarily, as 15 recovered under medical treatment. Another attitude—and he only mentioned it to condemn it—was that one should wait until the hæmorrhage stopped and then operate; that was wholly indefensible.

On what ground could one decide what cases should be treated medically, and what should be operated upon? A supposed distinction between acute and chronic ulcer was unreliable; in his series 3 cases with a short history died, and the autopsy showed they had chronic ulcers. Several hæmorrhages at long intervals occurred in 6 of his cases; they all recovered. There were several recurrences of hæmorrhage before admission in 4, and all recovered. Hæmorrhage just before and just after admission occurred in 3, all of whom died. When a patient collapsed it was not the repetition of the hæmorrhage that was dangerous, but the fact that the patient had not had a chance of recovering from the former bleeding. The question whether a given case should be submitted to surgery depended largely on whether the condition could be described as a collapse. The patient in a dangerous condition did not look as white as a sheet, but was rather of a dusky hue; he did not lie quite still, his brain was not working clearly, and he felt very ill. Such a patient, and no others, should be operated upon, and at once. His experience had been that one case a year for every hundred beds in a general hospital required operation. The mortality of cases that should be operated upon but which were treated medically was about 75 per cent. In his private practice he had never seen a fatal case of peptic ulcer, had never had a case operated upon, and had not had a transfusion carried out. Some of his points in treatment were: to inject morphia on admission, to begin feeding the patient within 24 hours, and to give alkalis within a few hours of admission. He had no fixed rules about dehydration, but he did not allow a patient to suffer from thirst, which was allayed by small sips of fluid.

He allowed a pillow, and did not raise the end of the bed. He did not think atropine was of use.

Mr. G. GORDON-TAYLOR considered there was little disagreement between physicians and surgeons on the treatment of hæmorrhage in acute peptic ulcer. But medical measures and blood transfusion did not control all cases and there was a mortality in this condition of about 3 per cent., showing that in a few cases in which life was gravely menaced surgery might be required. It was very important before an incursion into surgery to exclude such conditions as the hæmorrhagic diathesis, angiostaxis, hepatic cirrhosis of the liver, and septicæmic infections such as that of the hæmolytic streptococcus. He had now operated upon 11 cases of hæmorrhage from acute peptic ulcer, and each time at the request of a medical colleague. His present preference was for gastrotomy, the stomach being opened and bleeding vessels sought and secured by ligatures or mattress sutures. He thought continuous use of adrenaline for bleeding from chronic ulcer was to be condemned. There was no one operation in surgery which would give a patient complete protection against hæmorrhage from peptic ulcer.

In the treatment of severe hæmorrhage his first advice would be to collect as many donors as possible, as it was almost impossible in any given case to foretell what would happen, when or how the bleeding would stop. He would give continuous-drip blood transfusion, especially if the patient's hæmoglobin was under 50 per cent. and the pulse-rate 100 or more. He would have every case of hæmatemesis admitted to a fully equipped institution, for he did not agree that cases of severe hæmatemesis should not be moved, and several patients in a serious condition had been transported successfully from the counties round London to the Middlesex Hospital. Secondary hæmorrhage was a very grave complication, and one series had a mortality of 78 per cent. The object of operation in both kinds of ulcers was to deal with the bleeding point; his best results had followed indirect operation: pyloric occlusion and gastrojejunostomy in duodenal ulcer cases. But the most appropriate method was that which seemed advisable in the individual case. Before deciding all factors must be considered, such as intercurrent disease, antecedent illness, general physical conformation, personal courage, the kind of institution in which the patient was placed, and the general environment. He preferred to operate on these cases under splanchnic anæsthesia with slight general anæsthesia induced in the old-fashioned way by a whiff of chloroform and ether. By this means he felt convinced that the chances of recovery were enhanced.

The chief indication for operation was severe hæmorrhage, though in most of the very severe cases the patient was dead before any surgical measure could be undertaken; he had twice seen fatal hæmorrhage from duodenal ulcer that had eroded the hepatic artery. A second immediate indication was in the comparatively rare cases of concomitant perforation and hæmatemesis; and a third would be in cases in which drip transfusion had failed to control the hæmoglobin.

Until the time came when medicine could control gastric and duodenal ulcer as surely as it could in diabetes, pernicious anæmia, and some tropical diseases, hæmatemesis would continue to menace life. He pleaded for a closer and earlier coöperation between physician and surgeon in these cases at an early stage. And he stressed the great value of drip transfusion, which might be not only hæmostatic, but in any case, whether surgical or not, improved the well-being of the patient.

Dr. G. DE BEC TURTLE spoke of the disability caused by hæmatemesis in industrial life, and instanced his figures obtained at a chocolate factory. There were 15 cases, 2 of which had to be treated surgically, and 2 recurrences. That there were so few of the latter he attributed to the follow-up methods and care employed at the factory, and to the finding of suitable work for patients who had had ulcer. He considered that a contributory factor in the production of gastric ulcer was the constant change of working shifts, from day to night, with the consequent alteration of meal and sleep times. From the medico-legal point of view, it had been argued that as the bleeding sometimes occurred while the man was at work, it came under the compensation scheme, but a large series of American figures showed that a large proportion of cases (76 per cent.) had their attacks of bleeding while they were unemployed, some while they were in bed. If blood transfusion was being done, the pulse-rate gave, he considered, a good indication whether the bleeding was still continuing; if the pulse-rate was rising it portended danger.

Dr. ARTHUR HURST considered that the profession had been wrong in depending on hospital statistics for forming a judgment on these cases, as hospital cases were selected ones. Some time ago he wrote to 27 general practitioners who had been in practice for a considerable time, and the net result of their replies was that in 677 cases there were 9 deaths, a mortality-rate of 1·3 per cent. Morphia was given by those practitioners early in the case, with starvation for 24 to 48 hours, and very rarely transfusion. Only 3 of the 677 patients were operated upon, and all 3 died. He agreed it was possible to recognise the cases that were likely to die; it was his experience and general feeling that the small number that required operation were generally inoperable. In one case it was found post mortem that the ulcer entirely surrounded the duodenum, and its base was fixed to the common bile-duct and inferior vena cava. If Mr. Gordon-Taylor had been led away by the supposed merits of drip transfusion he must have forgotten the value of iron. Transfusion if carried out should be only small, and it should not be repeated unless bleeding recurred. Iron citrate, grs. 30 thrice daily, at once began to send the hæmoglobin up.

Prof. J. A. RYLE said the chief criticism he had to offer on the discussion was that people were still speaking on the basis of opinion rather than of fact, and that it was necessary to ponder longer the question of prognosis. He did not know how this was to be more accurately studied, whether by a big collective investigation or other means; but it was not enough to have gross figures of mortality, as in gastric and duodenal ulcer cases there were other factors to consider, and in children the mortality from hæmorrhage was very small. In 10 fatal cases among his private cases, there was gross disease of a different kind in 6. Other conditions to consider were age, sex, economic circumstances, whether the patient had or had not been moved to hospital, and so on. And it was necessary to know the prognosis when cases were treated by rest and conservative measures, when transfusion was done, and in various means of feeding. Christiansen had stated that the mortality in ulcer cases treated medically had doubled since transfusion was introduced. Even transfusion itself was complicated by the two methods of con-

tinuous-drip transfusion and small intermittent transfusions. It was not yet known what were the factors that contributed to morbidity and fatality in a patient who was bleeding. Many assumed the patients died from anæmia, but he did not consider that had been proved; patients having a high hæmoglobin value could yet die, and those with a low hæmoglobin could survive. It was known, however, that gross chemical disturbances followed hæmorrhage, with an upset of the acid-alkaline balance in the body.

Dr. IZOD BENNETT agreed that there were still many factors about which the profession still remained in profound and dangerous ignorance. Most would agree that one of the great difficulties in deciding on correct treatment of intestinal hæmorrhage was that one never knew when hæmorrhage had stopped until a few days later, and then it was realised that it had ceased some days previously. Even in cases admitted into special research wards, and studied carefully by Wright and Lelander, it was found almost impossible to select at the outset the cases that were serious, and it had been his experience that some of the very grave cases had been admitted as trivial ones. It had been very valuable to carry out hæmoglobin readings every two hours; when the fall called for drip transfusion, it was not checked by that measure. If transfusion was done before the anæmia reached a grave level, the transfusion seemed to promote further hæmorrhage. In 60 cases in his work there had been 4 deaths.

Dr. GEORGE GRAHAM agreed with Dr. Hurst, except that he considered when a patient died after having had blood transfusion he succumbed because he had not been given enough. If 2–3 litres of blood had been lost, it was not reasonable to expect that the deficiency could be made good by giving from 600 to 1800 c.cm. In the last eight years he had had 3 deaths from hæmorrhage after severe hæmatemesis out of 50 cases.

Dr. R. S. AITKEN said that in spite of the soothing statistics which had been quoted, physicians and surgeons recognised as they grew older that people did die distressingly often as an immediate result of hæmorrhage from ulcer. Why it occurred more often in hospital than in private practice was yet to be discovered.

Sir EDMUND SPRIGGS said that deaths from hæmorrhages in gastric and duodenal ulcer were rare in comparison with the total number of cases. Of 502 cases of gastric and duodenal ulcer in his experience, 6 were known to have died directly from the hæmorrhage; of those, 3 were old patients, and he did not think surgery would have saved them. If the necessary skill and technique were available—and only then—it was common sense to find a bleeding artery and put a ligature round it. He usually advised against moving bad cases of bleeding a long distance for institutional treatment, but his advice was not always followed, and yet he had not known of any serious consequences. Statistics, he concluded, were valuable, but a physician would be sadly wanting in his art if he was influenced by them in treating the individual.

Dr. HERMAN TAYLOR said he had had 5 grave cases, and he operated on them all. Of these, 2 were gastrojejunal ulcers and they recovered, the 3 other cases died, but before they died they were given as much blood as they had lost by their hæmatemesis, and their intestines were found to be loaded with blood. In one of them little else was found post mortem beyond a little œdema of the lungs. He had wondered whether the presence of so much blood in the intestine resulted in the absorption of some toxic substance, which, absorbed into the system, hastened or caused death.

ROYAL SOCIETY OF MEDICINE

UNITED SERVICES SECTION

AT a meeting of this section held on Dec. 14th the chair was taken by the president, Surgeon Rear-Admiral J. FALCONER HALL, and Major H. S. BLACKMORE read a paper on

Air-raid Precautions

with special reference to their medical aspects. It was very important, he said, that arrangements should correlate, and work in together. The authorities had decided about 18 months ago that the subject must come into the open and be properly organised. A special Air Raid Precautions Department of the Home Office had been established. The first task had been education; an anti-gas school had been started, and gave fortnight's courses as well as shorter ones designed to give a bird's-eye view to organisers. A series of pamphlets was being published to correspond with both groups, the organisation publications being called memoranda and the technical ones handbooks. The latter dealt almost entirely with gas; No. 1 was a bedrock book and discussed personal precautions. It was almost a best-seller. No. 2 was the first-aid book, designed for voluntary aid associations. No. 3 would be a clinical handbook for doctors. No. 4 was written for the decontamination section. No. 5 was not in print at the moment. No. 6 was specially written for factories and business premises, and No. 7 for merchant shipping. Three others, not on the market, were for gas, water, and electricity undertakings. The Government had also undertaken collection and storage of protective clothing and antidotes, and stocks were being accumulated. Respirators were being manufactured, with a view to providing enough for the whole population within 12 to 24 hours on emergency arising. Each depôt would be in charge of a storekeeper, who would have specimens for fitting and practice in use. Bleaching powder could not be supplied in adequate quantities by the ordinary trade, and therefore special arrangements had to be made for laying in the enormous stocks that would be required.

Details of organisation had been put in the hands of local authorities, and the response had been extraordinarily good. They were being asked to appoint an individual or committee to go into local air-raid precautions for the area. County councils and county borough councils dealt with the smaller authorities within their area. A survey was made and the area subdivided, each subdivision being required to make its own plans for police and fire brigade services, rescue, decontamination, and medical parties, and air-raid wardens. The medical officer of health was usually put in charge of the medical arrangements. The medical plan was very similar to that adopted in the fighting services. Bearer parties were allotted to first-aid posts, and were to be provided by the big voluntary organisations, which had undertaken to find personnel and give training. A party was to consist of four men, with a stretcher, four first-aid pouches, and a first-aid haversack. They should be based on depôts, providing a 24-hour service in relays, somewhere near the posts they had

to serve. The post itself should be reserved wholly for the treatment of casualties. Rural areas had skeleton arrangements only and relied on mobile reserves provided by the nearest urban area. Every urban district was to work into its plans a definite rural area in its neighbourhood. To avoid confusion between decontamination of persons and of objects, the term "decontamination" had been dropped from the title of first-aid posts, but that was where all individuals were to go. Mustard gas called for very urgent cleansing. Ideally there should be a decontamination centre in every house. In practice they aimed at getting every potential patient within a mile of help—i.e., not more than twenty minutes away from a first-aid post. There had therefore to be large numbers of first-aid posts and, cutting it as fine as possible, there must be 8000 square feet of floor space for each. Inside it there must be two divisions for the sexes; and division between those who were contaminated with mustard gas and those who were not. Doubtful cases would have to be placed at the discretion of the post.

Working with these organisations would be ambulance transport, and here improvisation would have to come into play. A fitment had been made to carry four stretchers in a tradesman's 10–15 cwt. van. Casualty clearing hospitals must be capable of giving full hospital attention, including surgical emergency service, but casualties could not be retained in areas liable to repeated attack. A plan must be made to remove cases to base hospitals further away. There was no other distinction between the casualty clearing and base hospital; they gave the same service. The base hospitals could be situated anywhere within reach. At present, ideas were concerned with short-range evacuation, but it might in time be necessary to consider a train ambulance system in some parts. Hospitals could not be improvised within 48 hours, and the service must be capable of being brought into being in that time. Staffing the hospitals called for a good deal of thought and coördination. The total numbers would be enormous, and cordial coöperation from the population was essential to success. Efforts were being made to obtain and train volunteers. The work was going quietly ahead but required a good deal of stimulation. The work had not so far been carried further than the local authorities. Now was the time to embark on appeal to the public. The whole thing was a network, and it must be a network in close coöperation.

The medical profession were being instructed specially in anti-gas work. The one very serious thing to be anticipated was panic and loss of national morale. Doctors were such a stay and prop to morale that their training was of the greatest importance. Sixteen specially trained whole-time doctors were now carrying on courses of instruction to their fellow practitioners, to medical students, and to nurses. Over 500 students had been trained since October, and about 400 doctors and 400 nurses; the scheme was working very satisfactorily.

Colonel E. M. COWELL said that one in fifty of the population were needed as medical personnel; including non-medical services, one in thirty would be needed. Germany already had an air defence corps of one in six. Ultimately the whole population would have to learn something about it. Without the coöperation of doctors, the work could not go far.

He showed a film illustrating first-aid surgical work in protective clothing; a strong man could only work in this clothing for an hour and a half to two hours. It was essential to have fit men, and soldiers might be called on. All battalions were being given some training.

QUESTIONS ANSWERED

In reply to a question Major BLACKMORE said that all contaminated cases would be dealt with at the first-aid post. The suggestion had been made that the public should cleanse themselves, but it was doubtful whether people would do it properly, and without risk to others, although the treatment advocated was simple washing. It had been stated in print that if an individual was near home, he should go there.

Mr. GRAEME TALBOT said that the eyes must be washed at once with plain water, but a patent preparation was advertised in the Government handbook. He thought it a pity that the advertisement should appear, and also felt that an eyebath would prove less efficient than a douche.—Major BLACKMORE agreed, and said that arrangements had been made for eye douching in the first-aid posts. He did not think people were going to do anything for themselves really; he thought they would go to the posts.

Group Captain S. MARSHALL asked if first-aid posts were to be protected against missiles and gas, and whether arrangements were to be made for reclothing decontaminated personnel.—Major BLACKMORE replied that the posts would be structurally protected as far as possible and should certainly be gas-proofed. The question of clothing had not been wholly decided, but fresh clothing would be provided, and efforts would be made to de-gas the old clothing, if that proved practicable. He did not know whether a standard garment would be manufactured, or whether local shops would be drawn on; this subject was being considered at the moment. Asked if alternative water-supply would be provided for first-aid posts, he answered in the negative; the water-supply problem was being investigated by certain local authorities, but such great cost was involved that the problem seemed insoluble—at any rate by central action.

Dr. CECILE BOOYSEN asked for more information about the research behind the recommendations. For example, a gas-proof room prepared carefully according to the instructions had proved quite inadequate when tested in a laboratory.—Major BLACKMORE replied that the experiments conducted had been performed on discarded telephone kiosks, which the students were required to gas-proof. Traps were laid to catch out the students and then a gas cloud was allowed to drift over the kiosks with test papers inside. It was possible to keep out enough of the gas to keep the air inside respirable and non-toxic, though elaborate chemical tests might reveal traces of gas. Further, the people inside would have gas masks as a second line of defence. People were urged to make their own gas-proof rooms in order to comply with the fundamental principle in air raids of dispersal for safety. The vast majority of casualties, moreover, occurred in the open.

Dr. H. JOULES asked if there was any defence for children under ten; and how many aeroplanes were to be anticipated and the area they were likely to cover.—Major BLACKMORE said little could be done for the child under five; from that age on they could be persuaded to wear a respirator, but the resistance to breathing, though reduced to 2½ inches of water, was enough to inhibit small children. A pram cover had been designed to convert the pram

into a gas-proof room and this worked excellently. The objections were the difficulty of manipulating a perambulator and the fact that only 25 per cent. of the population of the East End of London possessed perambulators. A gas-proof box had been produced for children up to two, and worked well, but the babies objected strongly and yelled. The sight of a mottled face through a yellow celluloid window always convinced the mother that the child was being suffocated, and she took it out. Further possibilities were being explored. One of the difficulties was to find personnel for experiment.

Asked if cellars were best for gas-proofed rooms, Major BLACKMORE replied that they were, but the proofing must be very complete as most of the gases were heavy; and also there must be an alternative exit; and all fear of flooding must be eliminated. He personally preferred the first floor.

Mr. C. HOPE CARLTON asked what attempts would be made to deal with ground contamination in first-aid posts. Hundreds of people would bring gas in with them. He also asked about evacuation, reminding members of the intense concentration of people at such centres, and whether they would be evacuated centrally or peripherally. Could the children be moved into the country at the earliest warning?—Major BLACKMORE answered that the amount carried on boots would not be very great; he did not think the problem very serious, and any way the personnel would be in protective clothing and gas masks. Patients would enter through two gas locks. Decontamination squads were part of the organisation. Evacuation was a very serious problem; for the population generally it was to be encouraged on a voluntary basis, and organised for those who wanted to go. Schemes were being considered. Cases were to be collected to casualty clearing hospitals and then taken thence to outside hospitals by external ambulance convoy. The view held was that vapour contamination could be ignored for casualties being carried through the streets.

Dr. MAVIS GUNTHER asked how mustard gas would be dealt with in the water used for decontamination.—Major BLACKMORE replied that mustard gas dissolves very very slowly and slightly, and hydrolysis would deal with it. A mustard strewn street would be dealt with by hosing down, driving the mustard into the drains by friction. This water had to be dealt with, in gutters, traps, and sewers, by decontamination squads.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society held at Sheffield on Nov. 27th with Dr. RUTH NICHOLSON, the president, in the chair, was devoted to a discussion on the

Indications for Cæsarean Section

At a previous meeting of the society Prof. A. M. CLAYE (Leeds) had stated that until fairly recently the only indications were contracted pelvis and obstruction of labour by tumours. Objections to the classical operation were: (1) its high mortality (1·5 per cent. at the best time, 9·4 per cent. late in labour, and 26·5 per cent. after attempts at delivery); (2) the risk that the scar might rupture in a subsequent vaginal delivery; and (3) the risk of general peritonitis. The lower-segment operation had the advantage of a lower mortality (1·6 per cent. in 559 cases at the Leeds Maternity Hospital) and a much less dangerous scar. In view of the good results obtained there seemed to be no reason for confining the operation to one cause of delay—i.e., contracted pelvis—and Prof. Claye thought it might be used occasionally in cases of primary inertia, including colicky uterus, or cases of occipito-posterior presentation with poor flexion where mother and child might be in danger long before full dilatation of the cervix. In such circumstances section carried less risk than trachelotomy or manual dilatation. He had also performed the lower-segment operation in patients with fibroids, heart disease, scarred cervix, and carcinoma of the cervix, and in cases of brow presentation. In a series of classical sections the indications, other than contracted pelvis, were placenta prævia, fibroids, toxæmia, accidental hæmorrhage, repeated transverse lies, previous complete tear, previous puerperal insanity, breech presentation in an elderly primigravida, and repeated prolapse of the cord. It was only rarely, however, that some of these indications justified Cæsarean section; in placenta prævia, for example, it should be considered if the patient is a primipara in good condition, the child being alive and well developed and the placenta central. It was often argued, said Prof. Claye, that the obstetric art must be preserved, and that if all difficulties were treated by Cæsarean section, it would disappear. While agreeing that the operation should be kept for carefully selected cases he thought that the primary object of obstetricians should not be the preservation of the obstetric art but the welfare of mother and child.

Mr. WILLIAM GOUGH (Leeds) deplored the growing tendency to treat any obstetric difficulty by Cæsarean section as a first line when it should really be a last line. The operation, though easy, was by no means trivial and a low maternal mortality figure was not the sole criterion of success. There was always the possibility of subsequent disability from, for example, adhesions, herniæ, or fistulæ. He felt that section could rarely be justified as a method of treating primary inertia though no doubt every obstetrician could look back on cases where he had eventually wished that he had performed it. It was impossible to foresee how any particular case would finally turn out, but as a rule they did well without interference. Where fibroids were present it was advisable to wait until the patient was well on in labour, for the fibroids often went up out of the way as the lower segment was taken up. Mr. Gough did not himself perform Cæsarean section in frank breech cases unless the pelvis was contracted. He used the operation in picked cases of placenta prævia but did not approve of it as a routine. He rarely adopted it as a method of delivery in heart disease.

The PRESIDENT pointed out that the number of sections for contracted pelvis is being reduced by greater use of trial labour, followed if necessary by the comparatively safe lower-segment operation. The elderly primigravida with a large child might profit by section.

Mr. ALFRED GOUGH (Leeds) said that in a given case there was often more than one indication for section. For example a primipara of 44, a fortnight past her calculated date, with a large child, might have a slightly diminished conjugate and rigidity of the soft parts. None of these factors in itself would justify section, but taking them all into consideration one would not hesitate to operate. He did not regard uterine inertia alone as a sufficient indication, but occasionally the presence of other abnormalities such

as disproportion, toxæmia, or placenta prævia would turn the scale.

Dr. C. H. WALSH (Liverpool) preferred the lower-segment operation unless large veins were present. He thought that Cæsarean section was rarely indicated in heart disease.

Mr. ST. GEORGE WILSON (Liverpool) maintained that the usual approach to trial labour, as if it depended on anatomical considerations, was quite wrong. The test was really a physiological one. He also thought that the term "uterine inertia" should be replaced by the more expressive "disordered uterine action."

Mr. P. MALPAS (Liverpool) saw little value in a discussion of massed results of Cæsarean section. Every obstetric case presented individual risks and problems and the selection of Cæsarean section as the method of delivery must be based on a consideration of the dangers and results of all the other methods available in the particular case—natural forces, forceps, version, embryotomy. The lower-segment operation, while minimising the incidence of puerperal infection, did not confer absolute immunity against peritonitis, and drainage should sometimes be employed.

Mr. C. M. MARSHALL (Liverpool) said it was now about a hundred years since Baudelocque had expressed the opinion that Cæsarean section was being performed much too frequently. Almost every authoritative statement since that time had been prefaced by similar remarks. It was clear that modern improvements in the operation were greatly increasing its safety, and it was only natural that a demand should develop for its wider application. He thought it would be safer to explore all the possible ways in which the technique could be improved. He had now carried out the lower-segment operation in 170 instances without a death. Spinal anæsthesia, though its risks were higher in this than in other pelvic operations, endangered the life of the mother much less than general anæsthesia. In all severely ill women, whose reactions to lumbar anæsthesia were uncertain, he now employed local anæsthesia. The outstanding results recently published by E. F. Daily from the Chicago Lying-in Hospital clearly showed the advantage of this latter method. Speaking of his own technique in applying the lower-segment in placenta prævia Mr. Marshall said that after the abdomen had been opened, the presentation was converted to a breech. A small transverse incision was then made in the lower segment, and a leg was pulled through. Traction on the leg was kept up while the uterine incision was being extended, and in this way complete control of hæmorrhage could be obtained. If the breech could not be made to present and the initial small incision involved the placental site, the wound should be quickly extended with the index-fingers, the hand inserted, and a leg secured.

Dr. E. A. GERRARD (Manchester) referred to Banister's contention that only half the women who have had a Cæsarean section become pregnant later. He thought that this point was all too frequently overlooked.

Prof. CLAYE, in reply, said he thought Cæsarean section the right treatment for primary inertia or an occipito-posterior position only in the rare cases where there was maternal or fœtal distress and a partially dilated cervix. He used the term "inertia" of any cases with inadequate pains in which no other cause of delay was evident.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

AT a meeting of this society held on Dec. 10th Prof. MILLAIS CULPIN read a paper on

Personality and Neurosis

He questioned the suitability of his title, as he would limit the word "neurosis" to indicate an interference with the physiological function of nerve tissue. This would exclude such phrases as "obsessional neurosis." The conditions under consideration were really psychoses and could be separated from those conditions that typically end in certification by using the phrases "minor psychosis" and "major psychosis." Beginning with the investigation of telegraphists' cramp, he had passed on to the examination of over a thousand people actually at work and had found that amongst them a proportion of 1·4–8 per cent. were suffering from nervous symptoms of such a degree as would demand treatment. He made a distinction, therefore, between nervous symptoms and nervous disability, for all these people were at work. He gave figures showing the relation between nervous symptoms and other reactions such as efficiency at work, social adaptability, sensitivity to noise, and sickness absence. He stressed the need for instruction in the method of psychological examination, which could be taught just like any other clinical method. He then described certain classes or types that could be commonly recognised by the use of the method of examination that he himself taught.

PATHOLOGICAL SOCIETY OF MANCHESTER

AT a meeting of this society on Dec. 9th, with Dr. T. H. OLIVER, the president, in the chair, an address on

Influenza

was given by Dr. R. W. FAIRBROTHER. He said that the recent claims that influenza is primarily a virus disease are of such fundamental importance that it is necessary not only to examine them in detail but also to consider their probable significance. Influenza is a condition which may manifest itself in diverse forms; the most satisfactory classification is into three main types—pandemic, epidemic, and sporadic. The last is a vague group which undoubtedly embraces cases other than true influenza. Evidence supporting the virus theory is: (1) the isolation of the virus only from cases of epidemic influenza, the viruses isolated from various parts of the world—London, America, Australia, and Russia—being immunologically identical; and (2) the presence of antiviral bodies in human sera as demonstrated by neutralisation and complement fixation. A large percentage (50–60) of the normal adult population of Manchester possesses antibodies to a reasonable titre, and this suggests previous infection with the virus. The titre given by the serum of convalescents tends to be slightly higher than that given by normals. Antibodies against the virus of swine influenza are also present. Available information suggests that the swine virus is probably the human virus modified by prolonged propagation in swine. It is possible that the wide distribution of antibodies in the population

may account for the absence of epidemic influenza from the Manchester district in the past few years.

Attempts have been made, said Dr. Fairbrother, to utilise the living virus as a prophylactic agent; it is too early to assess its value in this respect, but it is interesting to note that on intramuscular injection of the living virus no discomfort is experienced. An antiserum has been prepared in the horse, but while this contains a relatively high antibody titre its value as a therapeutic agent in human influenza is doubtful. Thus the results so far obtained have no immediate practical value and while great progress has been made much remains to be done.

REVIEWS AND NOTICES OF BOOKS

Medical Aspects of Crime

By W. NORWOOD EAST, M.D., F.R.C.P. Lond., H.M. Commissioner of Prisons; Lecturer on Crime and Insanity, Maudsley Hospital (London University). London: J. and A. Churchill Ltd. 1936. Pp. 437. 18*s*.

COLLECTED here from various sources these essays constitute not only the "accumulated facts and impressions, and the opinions based on experience" gained during the past thirty-six years, which the author would share usefully with others, not only "the stepping stones over which he passed" in arriving at his present position, but a definite philosophical outlook which Dr. East intimates should characterise the students of delinquency and all those whose common aim is "the pursuit of truth as servants of justice."

Manifold are the complexities of abnormal conduct, and many are the approaches to the treatment of crime; theories on the subject are plentiful. Dr. East is not averse to theories, but he fain would have them hitched stoutly to facts; he recognises the joys of psychological balloonery, and would be ready to admit that there are points of interest in the mental stratosphere, but he would have us remember always that such activities, however pleasant and exciting, are useless unless the aeronaut returns safely to earth. "We must accept the fact," he contends, "that we may learn much about the psychological factors associated with criminal conduct and yet fail to help the criminal." More characteristic, however, than his insistence on relating suppositions to facts and theories to practice is his continual demand for "an impartial exploration by all the means at our disposal, unencumbered by unquestioning acceptance or obstinate rejection of any particular theory, whether this be psychological, physiological, medical or sociological." The exploration must be comprehensive, complete; in the case of the individual, "all the facts connected with a crime, as well as the past history and present condition of the offender, must be considered before conduct can be regarded as abnormal and outside the limits of the ordinary variations of persons of the same class and upbringing when subjected to similar circumstances or temptations"; with respect to treatment, "the problems are complex: psychiatry and psychology throw much light upon them. But other methods of approach are important also, notably the sociological, biological, anthropological and eugenic"—all must be systematically investigated; inasmuch as the offender is a member of society, "it is often necessary for the law to consider the interests of the public as well as of the offender, and moral and social obligations must be upheld if civilisation is to endure." Constantly he reminds us not to confuse the part with the whole, and that each problem must be viewed in its entirety if understanding is to be achieved.

Twenty-five years ago in introducing a discussion on vitalism at a meeting of the Pathological Society of Manchester, Dr. Haldane also instituted a plea for the study of the organism as a whole contending that in doing so "we perceive the continuity and connection which are present in the form, properties, and activities of the living being, and not simply the matter and energy which pass through it or exist in it. Similarly, also, we look at the surrounding environment as part of the whole, and it is in a sense true to say that an organism by its selective and other influence makes its own environment. . . . It is, further, insufficient to look at the organism as an individual merely. This is incomplete without reference to the stock. The individual dies and disappears, while the stock remains. . . . As conscious individuals men and animals are, it is true, much more than mere organisms, but this simple conception of the organism enables us to deal with all the facts belonging properly to biology." In reaffirming their faith the vitalists had discovered Hegel and with them Dr. East, too, would have us look upon the criminal manifestations of life as a whole—the individual and his environment, his present, his past, and his future as one and indivisible—and it is this holistic attitude towards crime that is emphasised most seriously in these essays.

A Textbook of Histology

Upon an Embryological Basis. Fifth edition of Lewis and Stöhr. By J. LEWIS BREMER, M.D., Hersey Professor of Anatomy, Harvard University. London: H. K. Lewis and Co., Ltd. 1936. Pp. 580. 27*s*. 6*d*.

MEDICAL students will find this book a valuable possession, for it not only provides an up-to-date guide to the microscopic examination of adult tissues and organs, but it also describes their development. And although the volume is packed with information it is easy to read. Spermatogenesis, oögenesis, and the fertilisation of the ovum are described; then by means of figures and a few pages of text a general idea of the development of body-form is conveyed, and the relations of the germ layers sketched, thus giving a background in the mind of the reader for the account of the histogenesis of each tissue. A short account of the development of each organ precedes the description of its microscopic structure when fully formed. Many references are given to original papers without impeding the text; and where the observations of early workers are still illuminating they are recorded. A paragraph on p. 177 notes the contributions made, in order of time, by Fabricius, Vesalius, Harvey, Malpighi, and Leeuwenhoek to our knowledge of the blood vascular system. A paragraph on p. 439 records the indebtedness of modern histologists of the ovary to Fallopius, de Graaf, and von Baer. In dealing with controversial subjects—e.g., the development of the blood and the character of the alveolar walls in the lung—the author has outlined the principal views now held and given the reference to his authorities. There are 455 illustrations.

Preventive Medicine

Fifth edition, reset. By MARK F. BOYD, M.D., M.S., C.P.H., Member of the Regular Field Staff, International Health Division of the Rockefeller Foundation. London: W. B. Saunders Co., Ltd. 1936. Pp. 561. 20*s*.

THOUGH written from an American standpoint for American practice, Boyd's "Preventive Medicine" makes an appeal to English epidemiologists, who are poorly supplied by writers of their own nationality with text-books on practical preventive medicine. The book is divided into eight sections, of unequal length and merit. More than half is devoted to diseases due to invading micro-organisms, and this section, with the short introduction, gives an excellent exposition of modern knowledge and practice. Dr. Boyd wrote his book for the practising health officer, so he deals little with contentious theory and much with the application of established principles. In it the health officer already equipped with some knowledge of epidemiology will find exactly what he wants to guide him in his work. Some dogmatism may be expected and excused in such a book, but it is unfortunate that scarlet fever is treated as a specific infection attributable to a specific form of streptococcus (*Strep. scarlatinæ*), and streptococcal sore-throat as an independent infection due to a different strain of streptococcus. This was the original conception of the Dicks and of Dochez, but it was never generally accepted, and recent researches have shown it to be untenable. In the chapter on plague, we read "Infection appears to reside primarily in the brown or Norway rat, from which it spreads to the black rat." This should be the other way about; the history of human plague is dominated by the black rat and its tropical rat flea (*X. cheopis*). The chapter on ringworm will puzzle English readers, for the commonest form with us (microsporon) is not mentioned at all, and the infections to which the chapter is devoted are little known in England. On the whole this gives a clear and accurate account of modern conceptions of infectious disease.

An Ethiopian Diary

By J. W. S. MACFIE. Liverpool: University Press; London: Hodder and Stoughton Ltd. 1936. Pp. 144. 26 photos and maps. 5*s*.

THIS is a plain account of the work of the British Ambulance Service in Abyssinia, as seen by its second in command. The author served with the unit from the time it left England until he was evacuated through illness immediately before the occupation of Addis Ababa by the Italians and the death of Dr. Melly. Dr. Macfie was selected primarily for his experience of tropical diseases; but when the ambulance, originally destined to serve on the Ogaden front, was sent into northern Ethiopia, he served chiefly as anæsthetist and physician to out-patients. His narrative gains rather than loses through its objective style, and the indictment of the Italians is made the more damning by the absence of comment. The barbarity of the bombing of the hospital camp on the Ashanghi Plain is reinforced by one of the many excellent photographs which shows that it must have been deliberate, while his eye-witness description of the destruction, after much bombing and machine-gunning, of the two Red Cross planes which had come to evacuate the wounded Dutch doctor, van Schelven, almost justifies the bitter gibe—"Like a red rag to a bull—like a red cross to an Italian." The author is not blind to the ingratitude, arrogance, inefficiency, and barbarity—the Emperor always excepted—of the Abyssinians, but his account of the casualties from mustard gas and of the wounded mangled again in hospital, makes one feel that no "civilising" end could justify such means.

The book is written for the general public, and the medical reader, in search of medical details, would be glad of the reference implied in "elsewhere I have written about the medical aspect of our work." Nevertheless, it is of absorbing interest and when strongly moved the author proves that he can write finely, as in his description of the Abyssinian army on the march at night picked out in the lorries' headlights, and in his tribute to his C.O., John Melly, and the "rounded perfection of his short career." In an episode of history in which we as a nation have little to be proud, the work of the British Ambulance Unit in Ethiopia was an exception.

The Marks of Examiners

By Sir PHILIP HARTOG, K.B.E., C.I.E., and E. C. RHODES, D.Sc., Reader in Statistics in the University of London, with a memorandum by CYRIL BURT, M.A., D.Sc. London: Macmillan and Co., Ltd. 1936. Pp. 344. 8*s*. 6*d*.

AT the end of last year a pamphlet entitled An Examination of Examinations was published by Sir Philip Hartog and Dr. Rhodes, under the auspices of the International Institute Examinations Enquiry Committee. It gave in brief the outcome of investigations into the problems of the marking of examination papers—the consistency or inconsistency with which one examiner allotted marks to the same piece of work at different times, and the degree of variability as shown between one examiner and another in marking the same scripts. This pamphlet, reviewed at some length in THE LANCET of Dec. 7th, 1935, aroused much interest and is now in its fourth impression. The results of extensive inquiries, however, clearly cannot be given and fully analysed in the compass of 81 pages. To present the data of the eleven investigations in full the present work has been published. In addition it contains a detailed discussion by Dr. Rhodes and Prof. Cyril Burt of the statistical and psychological problems involved. Both envisage and analyse in somewhat different ways the fundamental causes which lead different examiners to assign differing, and, as the experiments show, sometimes widely differing, marks to the same piece of work, and seek to determine from the data the "ideal mark" for each script. It is perhaps legitimate to warn the non-mathematically minded student that in this search for truth there is little, from his point of view, to choose between the approach of the mathematical statistician and that of the psychologist. He will find them equally distressing.

Sir Philip Hartog contributes a short section on some special points of difficulty in connexion with school certificate examinations, and he and Dr. Rhodes reply to some of the criticisms which were levelled against the conclusions of their earlier pamphlet. The total is a book of real worth and interest.

KENSINGTON MEDICAL SOCIETY.—A clinical meeting of this society will be held at St. Mary Abbots Hospital, Marloes-road, W., on Friday, Dec. 18th, at 8.30 P.M. Particulars from the hon. secretary, Dr. B. Barling, who may be addressed at the hospital.

THE LANCET

LONDON: SATURDAY, DECEMBER 19, 1936

STABILITY

ON the manner in which the people of our country and of the dominions overseas sustained the threat of a fundamental shock to the Constitution, noble congratulations have been received from other Powers. To dwell upon our good fortune would savour much of national pride. Yet national pride is just. That the days of deep anxiety had their physical as well as mental influence cannot be doubted, but that influence, which might have had sad sequels, was mitigated throughout by the unanimous view that the anxious situation was being met with justice. It was felt by all—or practically all—that while action had to be taken swiftly, no course, whether indicated by allegiance, sympathy, law, or precedent, had been left unexamined before the King's momentous decision was received. "I doubt whether under any other system of government, a crisis of this gravity could be solved with as little hurt to the body politic as under our system of constitutional monarchy." These were the words in the House of Commons of Sir ARCHIBALD SINCLAIR, speaking as a party leader, but speaking in fact with the voice of the nation.

Members of our ruling House have manifested in unceasing and untiring manner their interest in the promotion of health, as the fount of happiness and prosperity; and the well-being of his humbler subjects lay especially near to the heart of EDWARD VIII. We are convinced that in his successor, who comes over us with universal acclaim, the same warm-hearted impulses will be found.

CHANGING PRIVATE PRACTICE

IN our correspondence columns this week DR. ALFRED COX describes a new scheme of medical practice which is to be set in motion in the London area in the New Year. Under this scheme families with an income between £250 and £550 will be able, by payment in health of a graduated yearly subscription, to get the services of their own doctor in illness without having to worry about his bill. The London Public Medical Service, which is initiating this scheme as an extension of the existing service, is satisfied that there is a firm public demand for it, basing its belief on the success of the present scheme for medical attendance on the dependants of insured persons. The extension has secured the sanction of the B.M.A. council on the condition that any particular unit of the metropolitan area is to be excluded from it if the practitioners in that area should so decide and rules have been laid down for ensuring this liberty of contracting out. It is understood that of the 1100 members of the L.P.M.S. 400 have expressed willingness to take part in the extended scheme, and it is not known, although it may fairly be surmised, what is the view in general of the 6000 practitioners in the metropolitan area who are likely to be affected.

There are now in the country as a whole 53 schemes of public medical service with a membership of over 404,000 subscribers, and during the last four years the numbers have more than doubled. While this is only a small fraction of the population to be provided for, it is admittedly a good start, and it is at the start that the inertia is greatest. The schemes vary in detail, both as to what is provided and what is paid for the provision. It is worthy of note that in Swansea, Ipswich, and Leicester the capitation fee for the service is higher than that paid under the national health insurance scheme. Public medical services then have been established and, for better or for worse, they have come to stay. The oldest and so far the most successful schemes were those devised to get rid of cheap contract practice. The insurance scheme did this in 1911 for the wage-earners and it was the anticipation of the extension of the scheme to the dependants of insured persons that gave the impetus to public medical services. Whether the extension of the scheme to higher income limits will prove as salutary remains to be seen. The income limit of £550 proposed in the London extension scheme will, it is safe to say, swallow up the whole of most private practices. Would the result be the disappearance of private practice as it is known to-day? It would be a matter for keen regret if the intimate relationship which exists between patient and family doctor were to be injured. The champions of public medical service claim that in a service which is properly administered the relationship becomes more intimate and practical, for the absence of financial hesitancy encourages the more frequent call on the practitioner's services. There is no doubt that we must be prepared for great changes in private practice and the methods in which medical services are made available to all classes of society. It would be well if the change to an ideal system were a gentle process of evolution avoiding any open conflict between the voluntary and the compulsory systems. Obviously the national insurance scheme could not have been launched without an Act of Parliament. The public medical services so far arranged follow the lines of the national scheme in allowing free choice of doctor and patient, with greater freedom in the administration of the scheme itself because this has remained in the hands of the practitioners.

The success of any voluntary scheme of this kind depends on the degree of coöperation between the doctors who work it and the voluntary subscribers. It is this coöperation which is so difficult to secure. Perhaps the principles of insurance are becoming better understood by the people generally. The London extension scheme may well meet with more sympathy and understanding from a class of subscribers

whose more substantial economic position brings with it an added feeling of responsibility. It is an experiment whose result will be watched with keen interest. Alongside the interests of the public we are justified in considering the best interests of the medical profession, for it is only the same view from another angle. It is of vital importance that the conditions under which practitioners work should be such as to allow of the exercise of their highest powers and abilities; to ensure, that is, that the best possible service is given. Does the public medical service give this guarantee? No complete service can be rendered in surgeries and consulting rooms; schemes of wider range may lead of necessity to the work being performed at specially appointed health centres. Sir FARQUHAR BUZZARD last summer foreshadowed a development along such lines. New schemes for public medical service must be so flexible that they can be adapted to any larger scheme for provision of specialists, consultants, and hospital services in conjunction with institutions for research and development in medical knowledge and training. These things cannot be hurried; progress in organisation of medical work must be slow. All the great results enumerated in the recent report of the Ministry of Health have been the result of years of growth and development. Dr. COX's scheme contains, we are satisfied, the germ of progress if the practitioners who take part in it are prepared to coöperate in all public health activities and to take their share in medical services rendered to the whole population.

ANTITOXIN IN DIPHTHERIA

DIPHTHERIA is a preventable disease and the practice of active immunisation continues to make progress in this country. But until protection of the pre-school child is carried out upon an adequate scale no appreciable decline in incidence among the community at large can be expected. An annual toll of children's lives will continue to be taken, its magnitude subject only to such natural factors as the variation from year to year in the prevalence of highly toxic strains of the *Corynebacterium diphtheriæ*, to such preventive measures as the sanitary authorities can bring to bear, and to the promptness and adequacy of specific therapy. Having regard to the downward trend of mortality from infectious diseases in general during the forty years or so that antitoxin has been employed it would be unwarrantable to claim for this agent the whole credit for the decline in the fatality-rate of diphtheria to an eighth or tenth of what it was. That it has been by far the most important factor few impartial observers are prepared to gainsay. Even so, the present fatality-rate of some 4 to 5 per cent. is too high and might by the right use of antitoxin be still further reduced. The main cause of fatality is obviously inherent in the character of the disease itself; the stealthy invasion and the rapid but equally stealthy advance result, all too often, in the child receiving medical attention only when he has reached death's door. On the other hand, there is unfortunately no doubt that many lives would be saved were the practitioner more often to trust to his clinical judgment, as perforce he must do in many other illnesses, and give his patient the benefit that prompt antitoxin therapy affords. The swab is a good servant but a bad master. But, as Sir FREDERICK MENZIES remarks in the foreword to a report[1] just published, antitoxin is not always used in the manner and dosage calculated to give the best results, and even in isolation hospitals there is diversity of opinion and practice. The report which has been prepared by the medical superintendents of several of the large fever hospitals in London is an attempt to establish criteria primarily for the guidance of the medical officers in the L.C.C. hospitals.

It is of the first importance to remember that the essential function of antitoxin is to confer passive immunity; it prevents further damage by toxin but cannot repair damage already done. Toxin is produced continuously at the site of the false membrane and disseminated by the blood stream to all the tissues of the body to which, within a few hours of its liberation, it becomes firmly fixed. Thus the amount actually in circulation at any moment is never great. Antitoxin is capable of absorbing this circulating toxin, possibly also the toxin still only loosely attached to the tissues. It is powerless, however massive the dose, against toxin firmly combined. If the process of toxin liberation and combination is sufficiently intense, widespread, and prolonged, it results in the death of the patient in a few days from acute toxic myocarditis; or, he may survive the acute phase only to experience in the later weeks one or several of the so-called post-diphtheritic complications, the foundations of which were laid in the early days of the illness. Exceptionally, where toxin production is slight, or basal immunity high, uneventful recovery may occur without the assistance of antitoxin—a result which is virtually certain if at the earliest moment, when toxin fixation is minimal, antitoxin is introduced in such an amount as to ensure not alone the neutralisation of circulating toxin but of toxin still to be circulated from the patch of membrane within the ensuing few hours. It is clear that if the patient is already suffering gravely from the effects of toxæmia an immediate concentration of antitoxin in the blood becomes imperative; no further damage can be risked. This requires the intravenous route, if mechanically practicable and not otherwise contra-indicated. Where, on the other hand, the necessity for speedy absorption is less urgent the intramuscular route suffices. Under exceptional circumstances only should intraperitoneal injection replace intravenous, or subcutaneous the intramuscular route. The route of injection depends primarily upon the clinical severity of the case, and the main indications of clinical severity are enumerated in the report (pp. 6–7); but whatever the route the aim should be to give a

[1] The Dosage of Antitoxin in Diphtheria: Report of a Departmental Committee. London County Council. P. S. King and Son, Ltd. No. 3225. 6d.

single rather than divided doses, since the same unitage given in a single dose secures a higher and earlier concentration of antitoxin in the blood. If it becomes obvious that the first dose was insufficient, a second and possibly larger dose should be given, preferably intravenously, in order to make up so far as possible for time lost. In a patient treated with an adequate amount of antitoxin by the appropriate route a cessation of the advance of the disease should be apparent within 12 hours of intravenous injection or 12 to 24 hours of intramuscular injection. Before these periods have elapsed the temptation to give a further dose should be resisted.

There is no general agreement on the size of the therapeutic doses of antitoxin in the various types of diphtheria classified in the report. Obviously no rigid scale can be laid down, since a really satisfactory classification of diphtheria in terms of clinical severity is almost impossible. The report suggests "a sufficiently elastic scale of dosage to permit of its acceptance by as large a body of authoritative opinion as possible." The assessment suggested is based upon the anatomical site of membrane formation and the degree of toxæmia ordinarily associated with the site involved. These two factors permit of an approximate estimation of clinical severity as mild, moderate, and severe in each type and a further table suggests the dose and the route to be employed in cases which fall into each of these grades of clinical severity. The range of doses is from 2000 units intramuscularly to 100,000 units intravenously. The minimum dosage is indicated only where, as in hospital, constant supervision is possible. Where this is not possible the report commends the advice of the Ministry of Health (1922) that "it is seldom safe practice to rely on any dose which is less than 8000 units, whatever the age of the patient." Similarly, although rarely necessary, to exceed 100,000 units, it may occasionally be expedient to do so. The importance of the intravenous route is repeatedly stressed in the report and it is recommended that it should if possible be employed in any case in which it is decided that upwards of 20,000 units are necessary. The serum should always be in concentrated form, since its low protein content has secured a considerable reduction in the incidence and severity of serum reactions. On the other hand, its small bulk has facilitated the injection of large, sometimes unnecessarily large, doses of antitoxin. Such overdosage is not only wasteful of an expensive product but enhances the likelihood of serum reactions which otherwise might not occur were less protein introduced. Immediate and alarming serum reactions are nowadays of extreme rarity and the possibility of the occurrence should not deter the practitioner. Nevertheless it is advised, particularly if the intravenous route is proposed, that prior inquiry should be made as to a personal or family history of asthma or allied conditions, and of any previous injection of serum and the date thereof. Whether such a history is elicited or not, serum should never be injected by any route in any amount unless adrenaline (1 in 1000) is at hand, preferably in a syringe ready charged. At the first sign of reaction administration must be stopped and at least 5 minims of this solution injected subcutaneously. Whenever serum is given intravenously other methods of combating shock should be available. By whatever route, serum must always be injected slowly and at body temperature. The report advises the precautions which should be taken if there is a history of allergy or potential allergy. Briefly, these consist in fractioning and diluting the dose in normal saline and injecting subcutaneously, a route least likely to give rise to reactions, a first fraction followed at intervals by further fractions by the same route if the first injection elicited sensitivity.

The report conveys in concise form what may be accepted as approved practice in the antitoxin treatment of diphtheria, just as a previous departmental report [2] did the same for the clinical diagnosis of diphtheria. Intended primarily for the guidance of medical officers in the L.C.C. service, both reports should find a wider medical public.

[2] Nomenclature of Diphtheritic Infections, 1936. London: P. S. King and Son, Ltd. No. 3161. 3*d*.

ANNOTATIONS

APTITUDE TESTS FOR MEDICAL STUDENTS

THE examiner, they say, is often a kind father and fond of animals. But his trade is unpopular and some would go so far as to prohibit it altogether. The arguments of these reformers, though previously derided, were suddenly strengthened a year ago by the "examination of examinations" described by Sir Philip Hartog and his colleagues.[1] This showed that even an experienced examiner often gives a different response to the same stimulus repeated after a year's interval: thus if he is asked to re-mark the same paper (having forgotten what he said before) his answer is often astonishingly different. In last week's issue of the *British Medical Journal* Dr. Gilbert Millar tells a somewhat different story, emphasising the consistency of the results obtained in the Edinburgh University medical examinations: but those who have read the Hartog report will still be left wishing for more objective methods of testing knowledge and ability—methods that will leave candidates less at the mercy of human fallibility.

Our Scottish letter this week tells of preliminary attempts, also at Edinburgh, to apply vocational tests to the selection of medical students. Selection for training is the first point at which the ordinary kind of examination may fail, and it is here that the technique of the professional psychologist stands most immediate chance of being applied. In our own columns last summer Squadron-Leader R. H. Stanbridge [2] gave an interesting account of the use of such technique in the selection of aircraft apprentices in the Royal Air Force, and it is difficult not to believe that similar principles should be adopted in

[1] An Examination of Examinations. By Sir Philip Hartog and E. C. Rhodes, D.Sc. London, 1935. (See THE LANCET, 1935, ii., 1303.) The Marks of Examiners. By Sir Philip Hartog and E. C. Rhodes, with a memorandum by Cyril Burt, D.Sc. London. 1936. (Noticed on p. 1470.)

[2] THE LANCET, 1936, i., 1426.

weeding out the less promising medical students. In the United States aptitude tests are, in fact, being employed experimentally on a large scale, and a description of them was given not long ago by C. R. Flack.[3] Since 1927, he says, when they were started at George Washington University, they have been modified and revised four times, but not very drastically. In its earliest form the test lasted an hour, and the time was occupied as follows. During the first ten minutes the candidate studied a diagram of the heart and great vessels and a paragraph about them. The next five minutes was spent studying a passage in medical literature. So much was by way of preparation. During the remaining 45 minutes, working as rapidly as possible, he took six tests: a scientific-vocabulary test of 40 items, a premedical information test of 100 items, a visual memory test of 20 items based on the diagram already studied, a memory test of 20 items in the paragraph, a comprehension and retention test of 20 items based on the medical passage already studied, and lastly, a 15-item test of his understanding of printed material. The predictive value of these tests or of their subsequent modifications, in so far as the success of any given candidate in the medical schools is concerned, is regarded as remarkable. Indeed, it is claimed that no other criteria are of comparable value. By 1929 some 70 medical schools were already coöperating in the scheme, and by 1931 the number of colleges and universities participating had risen to 547.

Detail apart, it seems probable that tests on some such lines as these would be preferable to an ordinary entrance examination as a means of separating the sheep from the goats, or, to speak more accurately, the lambs from the kids. But what of the finished product? Will they enable us to select those candidates who will become not merely successful examinees but also sound practitioners? That is another question and, so far, an unanswerable one. To take up the challenge of the critics, it may well be that road-sense or clinical judgment may be acquired in larger measure than is commonly supposed. Mere slowness must not be confounded with unsoundness or incompetence and it is well to remember that although "the bed bug's got no wings at all, he gets there just the same." The tests described by Flack, with their emphasis on speed, are not likely to command general confidence, and the more comprehensive methods of choice employed by Stanbridge for his rather different purpose are distinctly more attractive, since they represent a weighing of the whole man and not merely of his mental accomplishments. This is what really matters, and it will matter still more when children are trained to pass intelligence and aptitude tests just as they are now trained to deceive the examiner. When so much hangs on the results no effort must be spared to devise tests and criteria that will truly serve their purpose.

A LIST OF OPTICIANS

EARLIER in the month (Dec. 5th, p. 1362) we noticed the issue of new regulations designed to protect insured persons against the supply of inferior spectacles at an exorbitant price. The avowed object is thoroughly good but the initiative, it seems, came from sight-testing opticians who have found much of their insurance work passing into the hands of technically less qualified persons. An appeal to the Ministry of Health resulted in a draft of regulations by the Ministry and the N.H.I. joint committee which were submitted to the British Medical Association for its comment. The Association pointed out that the wording of the regulations as drafted not only recognised the merits of competent opticians as dispensers of prescriptions, but implied that they were capable of testing sight and detecting diseases of the eye. To give official recognition of this kind to sight-testing opticians would be to run counter to the view strongly expressed by the departmental committees of 1922 and 1927. It would in fact give them a sort of back-door entrance to ophthalmic medicine and encourage like encroachments into other branches. Backed by the recognition of the Ministry it would be logically possible for opticians to give ophthalmic certificates and conduct eye clinics for school-children. These implications of the proposed wording and its probable results were laid before the Ministry by a deputation which included Sir Farquhar Buzzard, Mr. Bishop Harman, Mr. H. L. Eason, Prof. J. A. Ryle, Prof. Grey Turner, Sir John Parsons, and Mr. J. D. M. Cardell. The outcome of their intervention may be seen in the amended phraseology of the present draft, which enjoins the approved societies to provide an applicant with information as to his right to obtain benefit—i.e., examination, other than by the arrangements made by the societies. This should result in every member being told on his first application for benefit that he is entitled to an examination by an ophthalmologist. In the past this has not always been done, and a healthy insistence on this rule by the Ministry would benefit everyone concerned. But whether a committee composed of approved society representatives and sight-testing opticians will admit dispensing opticians to the closed list remains to be seen. If they do not we hope that the highly influential deputation will again intervene.

HOSPITAL AMALGAMATION IN LIVERPOOL

ON Nov. 27th a Bill for the amalgamation of the four Liverpool general hospitals—the Royal Infirmary, the David Lewis Northern Hospital, the Royal Southern Hospital, and the Stanley Hospital—was deposited at the Private Bill office of the House of Commons. A draft scheme for amalgamation was placed before the committees of the four hospitals in January of this year, and the Bill now deposited will be considered during the coming session of Parliament and may be placed on the statute book in the summer of 1937. It will be remembered that the amalgamation of the four general hospitals was one of the recommendations of the Liverpool Hospitals Commission which presented its report in January, 1935. The commission urged this amalgamation not only as an economy of effort and resources but as the necessary preliminary to a rebuilding programme which should concentrate all general hospital beds in one or two large hospitals. "We have been convinced," said the report, "by the evidence offered to us that the four general hospitals are all of them too small fully and economically to serve all the purposes of a great metropolitan general hospital. No one of them can permit to the fullest extent the deployment of the available medical skill on any particular case; no one of them can be quite completely equipped; no one of them can hope to provide the range of cases required for medical teaching and research." The Bill provides for administrative amalgamation, the effect of which will be to bring all four hospitals under one governing body, representative of the existing governing bodies. When this has been achieved considerable economies should be effected as part of the closer working of

[3] Jour. Amer. Med. Assoc., 1936, cvii., 61.

the four units, and the way will be open for extensive measures of coördination. A clause of the Bill describes one of the objects of the new "Liverpool United Hospital" in the following terms: "As soon as may be feasible the carrying on of all such work (i.e., the work of the existing hospitals) in new buildings on one site." The Bill thus contains a direct reference to the desirability of rebuilding on a single site. The commission suggested that a body should be formed to coördinate the policy of all the voluntary hospitals in Liverpool, and the Associated Voluntary Hospitals Board, which was the result of that suggestion, has been responsible for the promotion of the scheme for amalgamation, and is now considering the problems of rebuilding with the assistance of Mr. Herbert J. Rowse, F.R.I.B.A.

PERIARTERIAL SYMPATHECTOMY

THE repeated advocacy, by so distinguished a surgeon as Prof. Archibald Young, of the periarterial operation as an alternative to ganglionectomy in the treatment of various vascular diseases leads us to reconsider the evidence for its usefulness. An opening contribution [1] to a discussion at the Cairo Surgical Congress last January afforded him the opportunity for a restatement of his claims for the operation, and this he has now reprinted and circulated. After reviewing the history of periarterial sympathectomy, the physiological basis for the operation is discussed and the author concludes that the intramural nerve plexus of an artery is to be regarded as "a homogeneous structure, maintained at a certain degree of molecular tension which varies according to the receipt of nerve impulses from the central nervous system; . . . consequently disruption of the plexus is followed by the radiation of molecular shock to the distal branches of the vascular tree, with alteration of the physico-chemical reactions governing the most mobile part of the vascular tube." While this explanation may appeal to the physiologist, the surgeon may have his doubts whether the effects of the operation are explicable on physiological grounds, and will base his opinion upon clinical results. Prof. Young suggests that many surgeons are dissatisfied with the operation either because they have chosen cases which were unsuitable, or because, being unduly timid, they have failed to perform it in a sufficiently radical manner. The records of his own cases—notes of examination and after-history—are given in sufficient detail for others to judge how far the operation may be held responsible for the results achieved. The cases—which include chronic ulceration, delayed union of fractures, traumatic œdema, incipient gangrene, causalgia, thrombo-angiitis obliterans, and Raynaud's disease—are essentially similar to those described by other surgeons, and lead to the conclusion that periarterial neurectomy is of undoubted value in the treatment of indolent ulcers, in some cases of causalgia, and in alleviating the pain and limiting the extent of senile gangrene. Its limitations are seen in Prof. Young's cases of Raynaud's disease and thrombo-angiitis obliterans, in many of which ganglionectomy was subsequently required. Study of his clinical material case by case reveals the disappointing features which have led other surgeons to restrict the use of periarterial sympathectomy in the limbs to the relief of certain types of pain. That even this effect of the operation may be transitory is Prof. Young's personal experience. He has shown his own faith in periarterial neurectomy by having his left brachial artery stripped as one step in the treatment of chronic X ray dermatitis with ulceration. The operation relieved his pain, and grafts survived on ulcers when previous attempts at grafting had failed. A year later further grafting was undertaken after excision of a diseased area of skin; on this occasion the graft failed to take, and severe pain persisted throughout the long period which the ulcer took to heal.

[1] See THE LANCET, 1936, i., 119, 209.

CHRISTIE OF MUKDEN

THE death occurred on Dec. 2nd at his house in Edinburgh, after a short illness, of Dr. Dugald Christie, the well-known medical missionary, in his 81st year. As a boy he entered business in Glasgow; then, to use the old-fashioned phrase, he experienced "a call" and entered the medical profession with the intention of becoming a missionary. He qualified as L.R.C.P. Edin. and immediately took up a post with the Mukden Medical Mission. Here he remained for forty years, gaining the sobriquet "Christie of Mukden," and the fine work which he performed gained for him an unusual reputation among the Chinese official classes, as well as among his poor patients. None the less, his experiences were, at different times, dramatic and dangerous, as passages in an early autobiography show. In this he speaks of hostility and persecutions, "our houses and all our worldly goods burned, wars and deadly plague, tragic death among our ranks, partings with children sent away to the homeland—they have not been smooth years, but it has been worth our while." But he records the arrival of better things, writing: "We look back on almost incredible changes, and all who have shared in them feel that it has been a great thing to take part in the awakening of a nation, the regeneration of a great people. Hostility to foreigners is at an end. In all public emergencies, plague, war, famine, it is the missionaries, and of necessity specially the medical missionaries, that are looked to for advice and help." Assuredly Christie was a brave and optimistic man so to write, for during his sojourn at Mukden on three occasions it was found necessary to evacuate all foreign women and children in face of threatened risings. But he saw the foundation of a Chinese Medical College in Manchuria and two years ago the University of Edinburgh resolved to recognise the degrees of the Mukden Medical College. Christie who was created C.M.G. in 1911 was naturally the recipient of many Chinese honours, and in 1925 his Chinese friends erected a monument to him outside the Mukden College. He was a saint and a hero.

BENZEDRINE

BENZEDRINE is the name given to a synthetic substance (β-phenyl-isopropylamine) chemically akin to adrenaline and ephedrine and comparable with them in its pharmacological effects. It became known about three years ago, and has been widely recommended both by medical writers and by manufacturing chemists as a nasal application for its vasoconstrictor and shrinking effect on swollen nasal mucosa. That, however, is one of the least of its actions. It was found to wake animals from the narcotic sleep induced by barbitone, and Prinzmetal and Bloomberg [1] introduced it into the treatment of narcolepsy. Its blood-pressure-raising effect has been investigated in man by Myerson, Loman, and Dameshek,[2] who find that doses of the order of 20–50 mg. cause a rise of 8 to 68 mm. Hg in the systolic

[1] Jour. Amer. Med. Assoc., 1935, cv., 2051.
[2] Amer. Jour. Med. Sci., October, 1936, p. 560.

pressure with a much smaller rise in the diastolic pressure. If the drug is given subcutaneously the maximum rise is reached in about an hour or less, if by mouth in 1–2 hours, and the gradual return to normal may take up to 8 hours. These changes, however, are not responsible for its action on the brain, for the sleeplessness that it induces will long outlast the rise in blood pressure, and may be produced by doses too small to affect the blood pressure. It is suggested that the drug stimulates brain cells directly. Workers at the Maudsley Hospital have therefore tried to assess its effect on psychological processes. Peoples and Guttmann [3] described vividly how it causes a change of mood in mildly depressed patients, who become talkative, euphoric, even elated. Dr. Sargant and Dr. Blackburn, in our columns last week, described a carefully controlled experiment in which it was shown that the intellectual functions called into operation by "intelligence tests" were improved by the drug; the degree of improvement was not striking but they thought it statistically significant. Others have described in general terms how it removes the feeling of mental fatigue and gives a sense of confidence and clear-headedness. In another field, the radiologists [4] have found it useful for relaxing spasm in the gastro-intestinal musculature, facilitating, for example, the recognition of structural abnormalities of the duodenum. These various reports are certain to stimulate further investigation and clinical trial, and some of them are so striking as to encourage indiscriminate use without proper trial in controlled conditions. If benzedrine does all that is claimed for it already, it is pretty certain, if used repeatedly, to produce some undesirable effects as well. Myerson, Loman, and Dameshek mention a mysterious and astonishing polycythæmia—10 million red cells per c.mm.—produced in one or two patients by a daily dose of 40 mg. for ten days. The drug also impairs the appetite, and on p. 1461 Dr. Anderson and Dr. Scott report some alarming cardiovascular effects they have observed. These should be warning enough against its injudicious use, but it will be very interesting in due course to learn exactly what it is capable of doing within the limits of safety.

SIR HERBERT JACKSON

To those who knew him well perhaps the outstanding characteristics of Sir Herbert Jackson were his charming personality and his widespread interest in and knowledge of most branches of science. He took no active part in strictly medical research, but his work cannot be dissociated from it; his influence was significant. It is common knowledge that Sir Herbert observed the phenomena associated with the production of X rays some time before Röntgen described his epoch-making researches, but by some strange chance the significance of these observations somehow escaped him in spite of the fact that he had unrivalled knowledge of the subject of fluorescence. Sir Herbert was recognised as the one to consult if advice were needed on some obscure point in this subject, whether chemical or physical. It is however his work on the production of optical glass which constitutes his outstanding achievement. When the Great War came he grasped the nature of the problem that confronted those who were responsible for the production of the optical appliances without which the successful prosecution of the war would have been so much increased in difficulty. He threw himself into this war work with all his enthusiasm and skill, and some at least of his friends know that his life was shortened thereby. His personal friendship for and contact with the late Sir Charles Parsons resulted in the production of optical glass of such high quality that this country was, and still is, in the front rank in an industry on which so much scientific and industrial research depends. His interest in microscopy never abated, and as chairman of the advisory committee to the department of applied optics at the Imperial College of Science he did much to promote the teaching of this subject in its varied applications. His loss will be felt by a wide circle of friends by whom he was regarded with respect and affection.

TOXIC EFFECT OF METAL ON BONE

THE tendency of modern bone surgery is towards disuse of methods involving internal fixation of fractures. It is recognised that metallic agents in particular (such as plates, screws, and wires) act as foreign bodies, and may thus retard union. The risk of sepsis is also, of course, well understood, though the precautions taught by Lane and now generally practised should make it negligible in open operations on bone; and Haas [1] has been drawing attention to the possibility of late osteomyelitis following the insertion through the skin of pins and wires for the purpose of skeletal traction. But the direct toxic action of the metal is a danger that has been less seriously considered, and, as there are occasions (e.g., in the treatment of fractures of the femoral neck) when a metal fixative may be useful, any available information about such an action demands notice.

Ménégaux and Odiette [2] have approached the problem experimentally by testing the effect of metals on the growth of young fibrous and osseous cells, and on the structure of living bone. The tests were made in vitro—i.e., in tissue culture—and in vivo, and the results show that, while a few of the common metals do no harm, all the others, in different degree, inhibit growth in tissue culture and cause destructive changes in living bone. Whatever the type of experiment, the order of toxicity amongst the various metals proved to be the same, and tissue culture experiments, though obviously somewhat removed from the conditions of surgical practice, nevertheless seemed reliable for the particular purpose. They demonstrated among other things a cytotoxic action on fibroblasts and osteoblasts. Ménégaux and Odiette, who believe in the individuality of the osteoblast, hold that its specific action is to fix mineral compounds in developing bone and show that the metals that poison the cells also decrease the mineral contents of the culture.

Three series of experiments were made in studying the action of metals on living bone. Discs of various metals were placed under the periosteum of the bones of the leg in rats; wires were inserted into or around the tibiæ of rats; and metal plates were fixed to the long bones of rabbits and dogs. The most suitable bone for the last type of experiment proved to be the femur of the dog. At first attempts were made to fix artificially produced fractures by means of the plates, but this was too difficult, and subsequently the bone was deeply incised and the plate fixed across the cut. After a lapse of days or weeks, the bone was removed for histological examination. Iron and soft steel were found to be among the

[3] THE LANCET, 1936, i., 1107.
[4] Myerson, A., and Ritvo, M.: Jour. Amer. Med. Assoc., 1936, cvii., 24.

[1] Haas, S. L.: Jour. Amer. Med. Assoc., Nov. 17th, 1936, p. 1607.
[2] Ménégaux, G., and Odiette, D.: l'Ostéosynthèse au Point de vue Biologique: Influence de la Nature du Metal. Paris: Masson et Cie. 1936. Pp. 176. Fr. 35.

most toxic metals but aluminium bronze was even more destructive. These metals seriously interfered with the growth of osteoblasts and fibroblasts in tissue culture and hindered the fixation of mineral substances such as calcium. When placed in contact with living bone they had a degenerative effect on the periosteum, and produced granular changes and fragmentation in the bone itself. Copper and magnesium and their alloys stopped growth in cultures, but in living bone the natural resistance of the tissues was usually sufficient to prevent complete destruction, though magnesium was observed to destroy bones in rats and dogs. All these metals are therefore considered quite unsuitable for use in internal fixation of bones, and if they have been used, the plate, screw, or other appliance should be removed as soon as possible. Silver, with most of the other simple metals, all the alloys of aluminium, and most of the stainless steels, occupy an intermediate position. They are toxic enough to make their contact with bone undesirable, but with routine removal at the earliest possible date. Ménégaux and Odiette think that most of them can be used with impunity. Three metals fall into the group labelled non-toxic—namely, gold, lead, and aluminium. All, for obvious reasons, are unsuitable for internal splinting of bone; but fortunately three of the stainless steels are also innocuous—V²A Extra, Nicral D, and Platinostainless D. These, according to Ménégaux and Odiette, are the ideal metals, since they do not inhibit the fixation of calcium in bone repair and do not poison the cells of bone or connective tissue.

A FAMOUS STATISTICIAN

THE death of Harald Westergaard of Copenhagen at the age of 83 has removed another famous figure from the world of statistical science. Prof. Westergaard, who retired from his chair in 1924, retained his intellectual keenness in retirement and many will recall his speech at the dinner in honour of Karl Pearson in 1934. Of his writings that which will be best remembered by medical statisticians is the treatise on Mortality and Morbidity, first published in 1882, which deservedly passed through more than one edition. As recently as 1931 he published, in English, an excellent history of statistics. Westergaard was a strikingly handsome man of gracious personality and will be much missed by his English colleagues.

SCOPOLAMINE-MORPHINE SEMINARCOSIS

ALTHOUGH every means of obtaining painless labour has been discussed during the last year or two, comparatively little has been written or said of the process that used to be known as "twilight sleep." A recent paper[1] on the subject is based on an experience of twenty years and is therefore worthy of consideration. The authors make no extravagant claims and the practical merit of the method is obviously much reduced by the conclusion that "the disadvantages are chiefly from the standpoint of the attendants. Someone must be constantly with the patient, particularly the one who is supervising the injections." In other words, properly and efficiently used twilight sleep is available only for institutions. It is not feasible for the vast majority of private patients, since it requires the constant presence of the practitioner from the first injection, given during the first stage, to the end of the confinement. In its own special sphere the method has a place; for in spite of the not uncommon restlessness and occasional excitability of the patients, most of them come through their ordeal with no danger and scarcely any discomfort. Nor are the infants' risks increased when the process is managed by experts. But as a general means of avoiding the pains of labour genuine twilight sleep, even with the aid of barbiturates which the authors recommend, cannot bear comparison with the simpler methods commonly employed.

[1] Krebs, O. S., Wulff, G. L., and Wassermann, H. C.: Jour. Amer. Med. Assoc., Nov. 21st, 1936, p. 1704.

COLD FACTS FROM LABRADOR

THE appeal of the medical officer of one of the stations of the Grenfell Association for a "very small greenhouse" where he may grow seedlings to ensure better gardens for the fisherfolk and thus lessen deficiency diseases shows at once the difficulties against which the workers of the Association have to struggle and the thoroughness with which they cope with them. The work which was begun by Sir Wilfred Grenfell in 1892 is now carried on in five hospitals, six nursing stations, and four orphanage boarding-schools. The Association looks after the education of the young and distributes work among the people which enables them to buy what we would consider necessities from the outside world. The hooked rugs which the women make and the famous Grenfell cloth may be had at 66, Victoria-street, London, S.W., where donations to the Association may also be sent.

DEVELOPMENTS AT LEEDS

As announced in our last issue a great gift has been made to the University of Leeds: Mr. F. Parkinson, who was a student at the University in the early years of this century, has promised £200,000 to cover the expense of the great central block, whose erection has hitherto been deferred because of more urgent needs. In this block, which will form the most striking architectural feature of the University, will be the main entrance and the entrance hall giving access to the Brotherton library, which was opened a few weeks ago. It will also accommodate the administrative departments. Mr. Parkinson, who has already given £50,000 to provide scholarships for students, says of his new gift that he has in mind "an entrance and entrance hall which would leave an indelible impression on the mind of the student which he would remember in after years with affection." It is interesting to look back to the days when the disruption of the old Victoria University was being discussed and to remember how many people in Leeds and in Yorkshire generally feared that a University of Leeds might not be able to stand by itself. All such fears have proved groundless, and the number of students is greater than it has ever been. The developments in the faculty of medicine have been correspondingly striking: for we have seen the completion of the buildings of the medical school by which the accommodation of the department of physiology has been greatly improved; the establishment of an institute of pathology which is one of the most complete in the country; and the addition a few years ago of a well-equipped dental school.

A REQUEST was received last year from the Gas Light and Coke Company by the Royal College of Physicians of London for advice concerning domestic heating by gas, considered from the point of view of health and also of comfort. An advisory committee was appointed by the College and an interim report was issued in August, 1935. A further report is published this week signed by Prof. W. W. Jameson, Sir Joseph Barcroft, Sir Arthur Hall, Dr. Guy Crowden, and Dr. Reginald Hilton.

SPECIAL ARTICLES

REPORT ON A CLINICAL AND RADIOLOGICAL EXAMINATION OF WORKERS EXPOSED TO ALUMINA DUST*

ONE of the chief sources of silicosis in the pottery industry has been the exposure of workers to the dust of powdered flint in the processes of placing china biscuit ware in flint preparatory to firing the ware, and removing the adherent flint from the fired biscuit ware in preparation for decoration and glazing. The employers, realising this, experimented with various substances in the search for a substitute for flint as a bedding material, and sufficiently satisfactory results were obtained with alumina to justify, from the manufacturing point of view, its adoption for that purpose. Before coming to a decision as to this, the manufacturers asked the Home Office for advice as to whether the use of alumina would be attended by risk of pneumoconiosis to workers exposed to it. The Home Office suggested to the Medical Research Council that this question might be referred to the Committee on Industrial Pulmonary Disease for inquiry.

There were no satisfactory data regarding the effect of alumina dust on the human lungs, but a preliminary survey of the processes in the manufacture of aluminium showed that the men employed on the reduction furnaces were exposed to alumina dust and an endeavour might be made to determine, by examining those workers, whether that exposure had caused any injury to the lungs.

METHOD OF SELECTION

Before embarking on the clinical and X ray examination of the operatives who had for a number of years been exposed to the inhalation of alumina, a complete list was obtained from the British Aluminium Company of all those men in its employ, either at the Kinlochleven or the Lochaber works, who had worked for at least five years in either (1) the power-house and workshop, or (2) the refinery, or (3) the reduction factory. This list provided information for each operative with regard to his approximate age, precise occupation at the time of this "census," previous occupations, and particulars of his insurance under the National Health Insurance Acts. Similar particulars were also given for a number of past workers who were in receipt of pensions from the company. The examination was to be confined to workers in the reduction factory (and pensioners who had previously worked there), since these were the operatives most exposed to the dust. The total number of these men—i.e., who had worked there for more than five years—was 145 (including 8 pensioners). It was decided to examine a sample of 50 of these operatives, the sample to include men of different ages and different durations of work, in the reduction factory, so that in the event of any abnormal condition of health being found, its time of onset might possibly be discovered. From the approximate ages given the numbers selected were 6 at ages 20–29, 12 at 30–39, 12 at 40–49, 12 at 50–59, and 8 at 60–69, the last including two of the pensioners. Of those selected the durations of employment in the reduction factory varied between 5 and nearly 40 years.

Any man whose previous occupation was one in which he might have been exposed to a harmful dust—e.g., a slate quarrier—was definitely excluded from the sample (12 in all). With that exception no deliberate selection of any kind was made. The men with differing durations of work required to make up the age quotas were selected entirely at random from those of each age and duration type available on the list. With the two exceptions to be mentioned the sample should therefore be quite unbiased with regard to the health of the operatives chosen. The two exceptions were:—

(*a*) One operative included in the original selection had been ill for some time with "an irregularity connected with the blood circulation in his legs," was about to undergo an operation and was not available for examination. To take his place a second choice was made from the original list. (*b*) One operative refused to be examined at the last moment and the Examining Board accepted a substitute. The substitute happened to be one of those who had worked previously in a slate quarry, and had therefore been deliberately excluded from the sample.

The remaining 48 originally selected were all examined.

On the whole it appears that the method of selection should ensure that the sample is quite unbiased, and should give a very fair representation of the operatives at different ages and with different durations of work. Excluding those men who had previously worked in dusty occupations the sample comprised at all ages nearly 40 per cent. of the specified population available for examination, and a higher proportion in the older age-groups.

THE EXAMINATION

By arrangement with the Home Office, three members of the Silicosis Medical Board—Dr. C. L. Sutherland, Dr. A. Meiklejohn, and Dr. F. N. R. Price—made the clinical examinations at the factories. The record of examination of each worker included the following data: age; duration of employment (*a*) as a furnaceman attending the reduction furnaces, (*b*) on other work in the furnace-room; nature and duration of work in any other employment; family history and personal history of illness; notes on general nutrition, the presence of respiratory embarrassment, cough, and expectoration. Measurements of the chest and the condition of the upper respiratory passages were noted. A complete clinical examination of the chest was made, and physical signs were recorded and the interpretation of the clinical findings noted in each case.

Immediately before the clinical examination each worker was examined radiologically at the works, by arrangement with Messrs. Portable X-Rays Ltd., London, under the supervision of the members of the Medical Board. Radiograms were taken on 17 in. by 14 in. duplitised films with an exposure of 1/10th second at a distance of 6 ft., except in seven cases where, owing to thickness of the chest, the distance chosen was 4½ ft. The radiograms were examined in London by a subcommittee of the Committee on Industrial Pulmonary Disease.

A serious family history of tuberculosis was given in one case. The man himself had also suffered from pulmonary tuberculosis and tubercle bacilli were

* Report by the Industrial Pulmonary Disease Committee of the Medical Research Council. The members of the committee are: Sir Arthur Hall (chairman), Dr. A. E. Barclay, Mr. J. C. Bridge, Prof. S. L. Cummins, Dr. S. W. Fisher, the late Prof. E. H. Kettle, Air Vice-Marshal Sir David Munro, Mr. R. L. Rawlinson, Prof. M. J. Stewart, Dr. Cecil Wall, and Dr. E. L. Middleton (secretary).

found on one occasion in the sputum, but no clinical or radiological evidence of the disease was found at the present examination. It appears that a tuberculous pulmonary lesion was diagnosed in this case after 13 years had been spent as a tapper in the furnace-room, and subsequently the occupation of furnace-man was followed for 7 years without a recurrence of progressive disease being produced.

General physique was satisfactory in the majority of the men, but poor development or some deformity of the chest was noted in eight cases. Clinical examination of the chest revealed no change from normal in 41 of the men. In one physical signs were found consistent with paroxysmal bronchial asthma, of which a history was given, the onset being about ten years ago. Chronic bronchitis was diagnosed in a man who had been gassed in the war and treated in hospital four or five weeks. He had had several attacks of chest trouble since that time. In a few others slight adventitious sounds were found, with no other departure from normal.

RESULTS

In the last column of Table I. the conclusions arrived at on interpretation of the clinical and radiological data are indicated for each age-group by the letters A., B., C., and D., which have the following significance :—

A. Nothing found in the clinical or radiological examinations which suggests any changes in the lungs : 30 cases.

B. Changes in the lungs found clinically and radiologically : 5 cases in which the diagnoses were : (1) consistent with history of previous pneumonia ; (2) asthma ; (3) catarrh ; (4) chronic bronchitis ; (5) slight fibrosis or senile changes.

C. Changes in the lungs found clinically only : 1 case ; slight signs of bronchial catarrh.

D. Changes in the lungs found radiologically only : 14 cases. The changes in two were doubtful and in all the others they were of slight degree. Classification of the changes, and, in parentheses, the clinical findings, are as follows : (*a*) Slightly increased striation, or more fibrosis than usual ; 3 cases : (1) (occasional adventitious sounds) ; (2) (normal) ; (3) (flat chest). (*b*) Evidence of old pleurisy ; 3 cases (all normal). (*c*) Evidence of slight emphysema ; 4 cases : (1) (very muscular), (2), (3), and (4) (normal). (*d*) Calcified glands ; (both big men, in both occasional rhonchi found). (*e*) Slight catarrh. (*f*) Catarrh ; ? old pulmonary tuberculosis, right apex ; (normal).

TABLE I

Age-group.	Number of men examined.	Years of work in furnace-room.	Classification on basis of past history and clinical and radiological examinations.			
			A.	B.	C.	D.
20–29 ..	6	5–12	3	—	—	3
30–39 ..	12	6–18	7	—	1	4
40–49 ..	10	11–25	5	3	—	2
50–59 ..	14	14–34	9	1	—	4
60–69 ..	8	12–39	6	1	—	1
Total	50	5–39	30	5	1	14

CONCLUSIONS

After considering the results of the clinical and radiological examinations and the report on sickness rates the committee was unable to find, within the limits of the material included in this investigation, any evidence that the inhalation of alumina dust had caused fibrosis of the lungs.

The committee thanks the owners of the two factories at which the investigations were made, the managers and their staffs for valuable assistance in regard to the statistical inquiry, and for providing facilities for the medical and radiological examinations, and the workers for their interest and coöperation. Acknowledgment is also due to Mr. A. Bradford Hill, D.Sc., for advice on the statistical aspect of the inquiry, for selecting the workers for examination, and for providing a note on the sickness experience of the workers in alumina ; to the chief medical officer and two members of the Silicosis Medical Board—Dr. C. L. Sutherland, Dr. A. Meiklejohn, and Dr. F. N. R. Price—for the skill and care they devoted to the medical examinations. The committee appreciate the success achieved by Messrs. Portable X-Rays Ltd. in carrying out the radiographic work and the care and trouble they took to meet the unusual demands of this inquiry.

APPENDIX I

Sickness amongst Workers in Alumina

BY DR. BRADFORD HILL

In addition to the clinical and X ray examinations an attempt was made to measure the amount of sickness experienced by the workers in the two factories. The list of workers, which was obtained as a preliminary to the investigation, included particulars of the approved societies to which the operatives belonged under the National Health Insurance Acts. It was found that the number of societies represented by members at these works was very nearly fifty, but a large number of societies had but one or two members there. In fact, it was found that the sickness experience of over 80 per cent. of the operatives could be obtained from only 9 societies. It was decided to confine the inquiry to this number. With the assistance of the Department of Health for Scotland the 9 societies were approached and kindly provided the sickness history of the men belonging to them over the five years 1931 to 1935 inclusive. These operatives were divided into two groups : (1) men employed for at least five years previous to the inquiry in the reduction works, and (2) men employed for at least five years previous to the inquiry in the other parts of the factory—viz., the workshops, refinery, and power-house. The object of investigation was to see whether the former group, exposed presumably to a higher concentration of dust in the atmosphere, showed any pronounced difference in its sickness rates from the rate experienced by workers in the other parts of the factory. The histories related to 107 men in the reduction works and to 129 in other parts of the factory. As sickness rates vary with age, a preliminary comparison of the two groups was made with regard to that factor. Table II. shows that in the reduction works compared with the rest of the factory there were proportionately rather more workers at ages over 40 years and less at under 30 years. As sickness rates usually increase

TABLE II

Age last birthday on Jan. 1st, 1931.*	Number of men in—	
	Reduction works.	Other parts of the factory.
Under 20 ..	5 (*4·7*)†	10 (*7·8*)
20– ..	27 (*25·2*)	46 (*35·7*)
30– ..	31 (*29·0*)	33 (*25·6*)
40– ..	31 (*29·0*)	26 (*20·1*)
50–60 ..	13 (*12·1*)	14 (*10·8*)
Total ..	107 (*100·0*)	129 (*100·0*)

* Six men in the reduction works and five in other parts of the factory entered their societies during 1931–35. They have been allocated to the age-groups according to their age last birthday on Jan. 1st of the year in which they entered.

† The italicised figures in parentheses are the percentages in the age-groups.

with age, this difference may tell slightly against the operatives in the reduction works.

Excluding the eleven entries referred to in the footnote to Table II., there were 101 men in the reduction works and 124 in other parts of the factory whose sickness history was available for the complete five years. 36 of the former, or 35·6 per cent., and 54 of the latter, or 43·5 per cent., had no sickness at all during the five years. The difference between these percentages is small and not more than might easily arise by chance with such small numbers. The total number of claims made over the five years (including cases of workmen's compensation) was 135 in each group. From this figure calculation of a claim rate can be made; taking the rate as the number of claims made per 100 persons per annum, it is 25·2 in the reduction works and 20·9 in the other parts of the factory (for simplification the few entries have been counted as if they were present for the whole five years; more accurate treatment makes no material difference to the results). If the comparison be limited to *illness*—i.e., injuries, compensated or otherwise, be excluded—the two rates become 19·4 and 17·4. The rate is slightly higher in the reduction works.

A second rate to be utilised is the number of days of sickness per person. The total number of days of incapacity in the reduction works was 4027, and in the other parts of the factory 2885; this appears to be a large difference but the former total includes 700 days of absence of one man due to an injury (a W.C.A. case). If all injuries be excluded from both groups, the total days lost due to *illness* are 2039 and 2050; the number of days per person per annum is, then, 3·8 in the reduction works and 3·2 in the other parts of the factory, while the average duration of a claim is 19·6 days in the former and 18·3 days in the latter.

Finally, the type of sickness suffered by the two groups has been compared by means of the diagnoses recorded. This comparison is made in broad groups in Table III.

TABLE III

Diagnosis.	Number of sicknesses recorded under given diagnosis.	
	Reduction works.	Other parts of the factory.
Diseases of respiratory system ..	42 (*31·1*)*	59 (*43·7*)
,, digestive ,, ..	8 (*5·9*)	12 (*8·9*)
Rheumatism, &c.	13 (*9·6*)	6 (*4·4*)
Infectious diseases	5 (*3·7*)	1 (*0·7*)
Injuries (under W.C.A. and otherwise)	31 (*23·0*)	23 (*17·0*)
Skin (including septic) conditions	7 (*5·2*)	7 (*5·2*)
Other causes	15 (*11·1*)	16 (*11·9*)
No diagnosis	14 (*10·4*)	11 (*8·2*)
Total	135 (*100·0*)	135 (*100·0*)

* Percentages.

The operatives in the reduction works appear to have a rather *low* incidence of respiratory complaints, but taking the small numbers into account there is, in general, no very distinct difference in the proportional incidence of the various groups of complaints (or in the absolute incidence, as can be shown by calculation of the claim rates for each cause).

It appears from this admittedly limited material that the operatives in the reduction works experienced slightly higher sickness rates than the men in the other parts of the factory, but that no really substantial differences are revealed in the kinds of illness suffered by the two groups; the difference in sickness incidence does not appear to be due only to the older age-distribution of the men in the reduction works for a slight excess is apparent amongst comparable age-groups.

APPENDIX II

Investigation of Dust-clouds

Notes from a report by Mr. K. L. GOODALL H.M. INSPECTOR OF FACTORIES

The dust-cloud consists of alumina with small proportions of aluminium and sodium fluorides, sodium oxides, and cryolite. Carbon dioxide is present in the atmosphere with traces of carbon monoxide and fluorine. Soot was removed from the dust records by heating them over the flame of a spirit lamp for 15 minutes, and they were counted under a magnification of 1250 diameters. The counts represent all particles seen as distinct and resolved entities down to about 0·25 microns.

At Factory K, records taken with the thermal precipitator worn by furnace workers ranged from 1020 to 2430 particles in 1 c.cm. of air; samples taken to represent the general air of the furnace-room varied from 410 to 655 particles in 1 c.cm. At breathing level of a labourer emptying sacks of alumina, in the furnace-room, the concentrations were 1510 and 1580 particles in 1 c.cm.

At Factory L, where a different method is in use for feeding the furnaces with alumina, the concentration in the central atmosphere of the furnace-room was 408 particles in 1 c.cm.; at breathing level of men attending to the furnaces 608 to 1480 particles in 1 c.cm. At a point outside the furnace-room the concentration at breathing level of a man emptying wagons of alumina, inspecting alumina bunkers, and attending an underground alumina conveyor, was 426 particles in 1 c.cm.

The median sizes of particles over the whole series were between 0·23 μ and 0·5 μ.

HIGH VOLTAGE X RAY THERAPY AT ST. BARTHOLOMEW'S HOSPITAL

THE Mozelle Sassoon high voltage X ray therapy department at St. Bartholomew's Hospital was opened on Thursday of last week by Mrs. Meyer Sassoon, donor of the department, in the presence of a large and distinguished gathering. Immediately following this ceremony, a memorial plaque to the late Dr. R. G. Canti, clinical pathologist to the hospital, designed and executed by Miss I. Donaldson, was unveiled by Dr. Malcolm Donaldson.

THE NEW INSTALLATION

Lord STANMORE, treasurer of the hospital, expressed the profound gratitude of the governors to Mrs. Sassoon for her munificent gift, to the Sir Halley Stewart Trustees for their endowment of a fellowship for a whole-time officer to the department, and to the British Empire Cancer Campaign for their support in connexion with cancer investigation for many years.

Lord RUTHERFORD spoke of medicine's debt to science, and especially to physics, of which the two greatest gifts were, firstly, the discovery of X rays in 1895, and secondly, the discovery of radio-activity in 1896. X rays have become indispensable in medicine, both for diagnosis and treatment. Lord Rutherford then referred to the steady and slow development of X ray tubes, which had made possible the very high-powered apparatus that he had just viewed. Such an apparatus, working at one million volts, would enable rays to be produced which would equal in wave-length the gamma rays of radium. He emphasised the fact that X rays and the gamma rays of radium were identical in nature, and he was certain that if a beam of gamma rays could be com-

pared with a beam of X rays of the same wave-lengths, the effects would be found to be identical. The energy of the shortest wave-lengths of the gamma rays from the radium family of elements would correspond to a maximum of two million volts, but the average corresponding voltage for the complete spectrum of these rays would only be about 600,000 volts. It would be seen that a beam could be produced from the new high-voltage installation which would approximately be the same in quality as a beam of gamma rays, but at a very much higher intensity. For these reasons he looked forward to a comparison of the results obtained by the new installation with those of the radium beam research at the Radium Institute, with which he had been associated. Lord Rutherford then referred to some of the features of the installation. The tube, which had been designed by his old friend, Dr. T. E. Allibone of Metropolitan-Vickers, was no less than 30 feet long and it weighed 10 tons, and it was hoped that from it would be obtained radiations produced at a voltage which was as high as, if not higher than, that obtained in any other country. He congratulated the governors of the hospital on their energy and vision in initiating this work, and he would watch with great interest the progress of what must be regarded as a great adventure.

Lord HORDER said he spoke as chairman of the original radiotherapeutic department of the hospital, the pioneer department of its kind in the country, which had now been merged into the cancer department, under the chairmanship of Sir Charles Gordon-Watson. Throughout the history of this department there had been close collaboration between the hospital and the British Empire Cancer Campaign. He wished to make it clear that this new high voltage department, itself a great enterprise, was also part of a concerted scheme of investigation which had been in progress for many years. What was important in any attack on the cancer problem was team-work—collaboration between clinicians, radiologists, pathologists, and physicists—and he considered that the prosecution of the scheme was in the hands of a personnel second to none in this country. It was, as Lord Rutherford had said, a great adventure, and no one could predict what good would accrue. Whatever the result, it would be a necessary addition to knowledge. Radiation had much to its credit. It was hoped that its credit would be added to through this generous gift.

Sir CHARLES GORDON-WATSON said it was his privilege to offer grateful thanks to Mrs. Sassoon for her splendid benefaction. He traced briefly the development of radiation research in the hospital from the first diagnostic installation in 1897. Radium was in use in the hospital, he said, before the war, and in 1919 the store was increased by an allocation of radium by the Medical Research Council for research purposes. Subsequent allocations from the British Empire Cancer Campaign and from private donors soon ensured that radium treatment would be available to every patient in the hospital who required it. The Campaign radium was used in the well-known experiments of Canti, which eventuated in the production of the Canti films. Research in high voltage X ray treatment began in 1924, when a special department was created with a whole-time officer, and for some years it had been contemplated to increase the voltage to upwards of a million, whenever funds and apparatus became available. The difficulty of the X ray therapist had always been to secure an adequate dose to the growth without serious damage to the healthy tissues. Greater penetration and higher intensity would help to achieve these objects, and it appeared that the difference in radio-sensitivity between normal and cancer tissues depended to some extent on the wave-length of the radiation.

THE CANTI MEMORIAL

Dr. MALCOLM DONALDSON spoke of the late Dr. Canti's contribution to cancer research, and especially to the establishment of the high voltage department. As far back as 1929 Canti had been thinking out means for the initiation of a high voltage department, and when this had become possible Canti's tireless energy and enthusiasm in the preparation of the plans were a stimulus to all his colleagues. Canti was perhaps best known to the public for his films on the effects of radiations on tissue cultures, but these were only incidental to a well-planned scheme of research upon which he was engaged up to the time of his death. He would be sadly missed in all the many spheres of his activity, but nowhere more than as hon. scientific secretary of the British Empire Cancer Campaign.

MEDICINE AND THE LAW

Inadequate Post-mortem Accommodation

ANOTHER protest against the disgracefully inadequate accommodation for post-mortem examinations in country districts was made last week. Giving evidence at an inquest held near Worthing, Dr. A. J. Head of Storrington, Sussex, described the conditions in which he had to make an autopsy. The place was a shed or lean-to, quite close to the road: it was difficult to prevent school-children from looking in: when the door was closed there was no light because there was no window. There was no sanitation and no water-supply. A butcher would not be allowed to slaughter cattle in such a place. Dr. Head added that he believed that these shocking conditions existed all over rural England; he had practised in three counties, and they were much the same in this respect.

This inadequacy of accommodation for autopsies is, of course, a notorious cause of complaint. Two years ago Sir Samuel Brighouse had to draw attention to premises at Aintree which consisted of a dirty outhouse with no table and no supply of warm water. A year earlier Dr. D. G. Garnett, the medical officer of health for Leiston in Suffolk, wrote an open letter to the Home Office in condemnation of the place in which he had to work; there was scarcely room to turn round in it and there were no means of washing. In part these difficulties have been due to the sensitiveness of public opinion which reflects itself in the laws passed by Parliament. For fear of distressing the relatives of deceased persons, it has been felt that mortuary and post-mortem room should not be under the same roof. Section 143 of the Public Health Act of 1875 made provision for a post-mortem room "otherwise than at a workhouse or mortuary." These words disappear in the equivalent clause of the new Public Health Act which comes into force next year. The official committee which framed the 1936 Act reported that the most convenient place for a post-mortem room was at a mortuary and that, provided the room was properly separated from the rest of the mortuary, there appeared to be no good reason why it should not form part of the same building. It is a little curious

that Section 141 of the 1875 Act authorises the Minister of Health to insist that the local authority shall provide a mortuary, whereas Section 143 does not allow him to insist on the provision of a post-mortem room. The changes which the 1936 Act makes, while otherwise reproducing Section 143, are valuable. When the new Act takes effect, the Minister will be able to insist on local authorities and parish councils providing a post-mortem room; there will be power to charge for the use of the room, and there will be no longer any necessity to place the mortuary and the post-mortem room in separate buildings. The Ministry of Health must use its powers to put an end to the disgusting conditions which exist in country districts to-day.

Prosecution of Nursing-home Proprietors

The Surrey county council took proceedings lately against a woman who was conducting a nursing-home at Epsom without being registered. An assistant medical officer of health and a superintendent health visitor had paid a visit to the premises. On their explaining that they had reason to believe she was using the house as a nursing-home, the defendant denied that she had any patients in her house, but she admitted that people were staying there. The officials found an elderly lady, completely crippled and bed-ridden, who was paying three guineas a week; other persons were paying three and two guineas. There was no suggestion of improper treatment; it was understood that the defendant had some previous training as a hospital nurse. The case for the prosecution was merely that the premises were not registered as required by the Act of 1927. The Bench said there must be a conviction, but, as the offence had been somewhat inadvertent and as the proceedings had been instituted as a warning, the case was dismissed under the Probation of Offenders Act on payment of five guineas costs.

The Nursing Homes Registration Act of 1927 is superseded by the prospective provisions of Part VI of the Public Health Act of 1936 to the like effect. When these provisions were being considered by the Joint Committee of both Houses of Parliament last June, there were vigorous comments on the 1927 exception in favour of Christian Science nursing-homes. The Joint Committee's duty, however, was merely to see that the 1936 Bill was faithfully reproducing the 1927 Act. To have cancelled the exemption would have been to invite opposition which might have been fatal to the Bill.

Withdrawal of a Special Treatment Licence

Dr. Stavros Constantine Damoglou was deprived last week, after a hearing before the Public Control Committee of the L.C.C., of his licence to give "special treatment" at a massage establishment at East Gate, Regent's Park. Dr. Damoglou, it was said, claimed "to make sightless eyes see"; in cross-examination he made this definite assertion. Miss Mabel Thomas, a blind witness, stated that she consulted Dr. Damoglou and was told that he would guarantee her sight in two or three years' time. She had electric needle and sun-ray treatment and was put on a diet. For about a year she went twice a week to Dr. Damoglou; later she went every day. After 16 months' treatment and paying £70 she was still completely blind. Mr. Robert Williams, an ophthalmic surgeon, said that Miss Thomas's blindness was due to the wasting of the optic nerve of both eyes: he thought it impossible for her to recover her sight. There was similar evidence about another blind patient. Dr. Damoglou protested that the patients had not given themselves time to be cured: Miss Thomas ought to have persevered, he said, for three years. In reply to questions from members of the Public Control Committee, he said that he was a doctor of medicine at the medical faculty of Constantinople and also of Paris: he had not registered as a medical practitioner here because medical men would not coöperate with foreigners.

THE STATE OF CANCER RESEARCH

INVESTIGATION has produced a number of well-established facts about cancer which seem at first sight to be contradictory. It is recognised that malignant growths can be produced in animals by a great variety of carcinogenic agents, including pure organic substances of known chemical constitution, many of which are chemically closely related to the sterols. These carcinogenic agents require a long time to induce cancer; they produce both sarcomata and carcinomata, of different histological types, and the tumours thus produced can with very few exceptions be transmitted to other animals of the same species by transplantation of living cells.

But there are certain tumours, first observed in fowls by Peyton Rous, which can be transmitted to other animals by cell-free extracts, and evidently therefore contain an agent separable from the malignant cells. This agent behaves like a virus; it brings about its effect almost immediately, its action is highly specific in so far as it reproduces only the same histological type of tumour as the one from which it was extracted. It can act as a specific antigen and produce antibodies, and these immunity reactions indicate that these agents are foreign to the fowl.

These two groups of facts—the existence of chemical carcinogenic substances and the existence of tumours containing a virus—are not mutually exclusive, as is believed by some. In reviewing the problem in the 34th annual report of the Imperial Cancer Research Fund Dr. W. E. Gye endeavours to explain how the facts can be fitted into a coherent picture of the ætiology of cancer. He quotes from a paper by Dr. W. Cramer published during the current year:

> "It has often been pointed out that the ætiology of cancer presents two entirely different and mainly independent aspects: first, the nature of the intrinsic cellular change which confers upon a cell the property of malignancy (this may be called the proximate cause of cancer), and, secondly, the conditions acting from without upon a normal cell which precede and bring about the intracellular change (the remote cause or causes of cancer). The numerous carcinogenic agents referred to above are the remote causes of cancer, and it is evident that our knowledge of these, although not yet complete, is fairly extensive. Their function is to prepare the area of tissue in which they act for the intrinsic cellular change by which a malignant cell is formed from a normal cell. In other words, they produce a 'precancerous' condition of the tissue. But they give no information on the nature of this intrinsic cellular change. The study of the carcinogenic agents and conditions (the remote causes of cancer) belongs in time and in mental concept to a different causal category from the study of the intrinsic cellular change—the proximate cause of cancer. They are not mutually exclusive. They complement each other."

The work carried out by the Imperial Cancer Research Fund bears on both these lines of inquiry.

VIRUSES

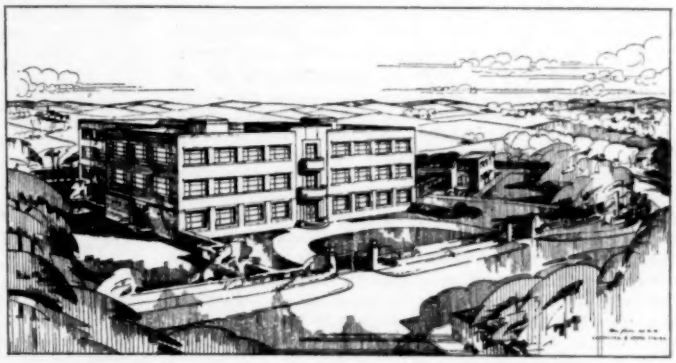
Perhaps the most striking piece of evidence demonstrating a close connexion between the chemical carcinogenic substances and the virus tumours is that it has been possible to induce by the chemical carcinogens tumours in fowls some of which are transmissible by cell-free filtrates and which, therefore, contain a virus. This, as Dr. Gye points out, enables us to conclude that there is no essential difference between the virus tumours which arise spontaneously in fowls and those which are chemically induced. And since the same chemical substance which induces tumours in fowls will also induce them in mice and rats and even in man, wider inferences become probable. The difficulty is that almost all the tumours induced by chemical carcinogenic substances in mice and rats and the great majority of the tumours induced in fowls have proved not to be transmissible by cell-free filtrates. Does that mean that this last group of tumours does not contain a virus, and must we therefore conclude that there is a fundamental difference in ætiology between malignant new growths transmissible by cell-free extracts and those transmissible only by living cells?

A priori it is possible that in such tumours a virus is present and is prevented from exercising its carcinogenic activity by conditions not yet understood. Since the direct method of demonstrating the presence of a virus in these tumours fails, an indirect method has been employed by Dr. L. Foulds taking advantage of the immunity reactions referred to above. Rabbits were immunised with material from a fowl tumour produced by the injection of dibenzanthracene and found not to be transmissible by cell-free extracts. The sera of these rabbits proved able to neutralise the virus present in cell-free extracts of the Rous sarcoma No. 1. The provisional conclusion is drawn that although a cell-free filtrate of the chemically induced tumour is not able to start a fresh tumour, nevertheless the filtrate contains an antigen which is present also in filtrates of the Rous tumour and which is associated with the activity of the filtrate.

A very similar result has also been obtained recently by Dr. Peyton Rous working in the Rockefeller Institute in New York with the so-called filtrable Shope papilloma of the rabbit. This is an infectious papilloma which can be transmitted by cell-free filtrates, and which after a long time develops at its base a malignant skin carcinoma. These observations have been confirmed by Dr. F. R. Selbie. The carcinoma, however, cannot be transmitted by cell-free filtrates. Nevertheless Dr. Peyton Rous could show that it contains an antigen capable of neutralising the virus present in the papilloma extracts. Dr. Gye warns his readers therefore against dogmatic conclusions that failure to propagate a tumour with cell-free filtrates proves the absence of a virus in a tumour cell.

CARCINOGENIC SUBSTANCES

Of the chemical carcinogenic agents special attention has been paid during the current year to the œstrogenic hormones. Dr. W. Cramer and Dr. E. Horning have confirmed the observations of Lacassagne that these hormones if applied to the skin over a long period produce in mice cancer of the mamma, even in the males. They find, however, a fundamental difference between the action of these œstrogenic hormones and the chemical carcinogens previously used. The latter always produce cancer at the site of their application, and there are no marked changes in the internal organs. The carcinogenic effects of the œstrogenic hormones, on the other hand, appear not at the site of application (the skin) but in one specific organ remote from it (the mamma). In addition, there are in the whole organism profound changes, which had not been observed previously: arrest of growth, emaciation, degenerative changes in the adrenals, hyperplasia of the islets of Langerhans, and a hypertrophy of the anterior lobe of the pituitary which not infrequently leads to the formation of adenomata of the anterior lobe, and which is accompanied by a loss of its chromophil cells. The condition of the animal resembles that observed after surgical removal of the pituitary gland. The prolonged application of certain œstrogenic hormones, therefore, produces a functional hypophysectomy which is morphologically associated with an enlargement of the anterior lobe and a loss of its chromophil cells. Whether any of these changes take a part in the development of mammary cancer under these conditions is at present being investigated. In view of the correspondence which has appeared recently in our columns concerning the possible danger to patients treated with œstrogenic hormone preparations for gynæcological conditions, special reference may be made to the statement in the report to the effect that there are no grounds for the fear that the therapeutic application of œstrin by skilled physicians may induce cancer.



Drawing of laboratories to be erected by the Imperial Cancer Research Fund on land at Mill Hill leased from the Medical Research Council.

On the other hand, the report contains a warning against the injection of radioactive preparations such as those made from thorium dioxide, which have been used in radiology for the visualisation of certain organs. Dr. Selbie has confirmed the observations of Prof. Roussy and his co-workers in Paris, that this substance even in small doses leads to the appearance of sarcomata.

THERAPEUTICS

The radiotherapy of cancer has been the subject of several investigations by workers of the Fund. Mr. H. G. Crabtree has found that while radiation damages the respiration of cells at body temperature, at low temperature the glycolytic process is affected.

Since normal tissues do not use glycolysis to any extent as a source of energy, the inhibition of glycolysis by radiation applied at low temperature to cancer cells may be said to constitute a differential action. Dr. Cramer finds that the period of recovery from the action of radium is very much longer for cancer cells than for normal cells, even when very small doses of radiation are applied, which by themselves have no apparent effect. By giving such very small doses at much longer intervals than are in use at present in the radiotherapy of cancer in man it is therefore possible to produce a cumulative action on cancer cells but not on normal cells. A differential effect on the cells of a malignant growth can thus be obtained and the method is recommended for a clinical trial.

The action of colchicine and of a number of other substances on cell division has been examined by Mr. R. J. Ludford, D.Sc. These substances produce an arrest of cell division, and it seemed possible that these substances might provide a means of arresting the growth of a tumour. It was found, however, in confirmation of the work of Prof. Dustin, of Brussels, that the action of these substances is not specific for cancer cells but extends also to normal cells, and that the amount necessary to produce an effect on the growth of a tumour is almost lethal to the organism. Therapeutic application is manifestly precluded by these findings.

The accompanying illustration shows the Imperial Cancer Research Fund's proposed new laboratories at Mill Hill.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capts. J. G. Boal to R.N. Hosp., Plymouth; J. P. Shorten, D.S.C., to R.N. Hosp., Malta; and H. B. Parker, D.S.C., to *President*.

Surg. Comdrs. T. C. H. Neil to *Tamar*; O. D. Brownfield, O.B.E., to *Britannia* for R.N. Cadets Sick Quarters, Dartmouth; F. E. Fitzmaurice to *Drake* for R.N.B.; N. B. de M. Greenstreet to *Royal Sovereign*; J. B. Crawford to *Pembroke* for R.N.B.; R. J. Inman to *Drake* for R.N.B., and to *Eagle* (on recommg.); and J. Kirker to *Leander*.

Surg. Lt.-Comdrs. D. Duncan to rank of Surg. Comdr., and reapptd.; and A. R. Ewart to *Suffolk*.

Surg. Lts. M. G. Peever to *Pembroke* for R.N. Hosp., Chatham; J. M. Holford to *Grenville*; F. Bush to *Valiant*; J. A. Page to *Drake* for R.N.B.; and S. Whittington to *Suffolk* (on recommg.).

T. A. M. Maunsell to be Surg. Lt. and appointed to *Victory* for R.N. Hosp., Haslar.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Sub-Lt. R. T. Jones promoted to Surg. Lt.

Proby. Surg. Lt. R. C. Anderson to be Surg. Lt.

J. L. Holgate entered as Proby. Surg. Lt.

ARMY MEDICAL SERVICES

Col. F. Casement, D.S.O., Assistant Director-General, A.M.S., at the War Office, has been selected to succeed Col. J. W. L. Scott, D.S.O., Hon. Physician to the King, as Deputy Director-General, A.M.S., at the War Office, from March 26th, 1937, when the latter vacates the appointment on promotion to Major-General. His successor as Assistant Director-General will be Lt.-Col. (temporary Col.) S. W. Kyle, R.A.M.C., at present Assistant Director of Medical Services in Palestine (*vide* also THE LANCET, Nov. 7th, p. 1124).

ROYAL ARMY MEDICAL CORPS

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. E. J. Kavanagh, D.S.O., M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ARMY DENTAL CORPS

Short Serv. Commissions: Lt. R. J. Godfrey to be Capt.

Short Service Commissions: Lt. (on prob.) W. J. Constantine is confirmed in his rank.

To be Lts. (on prob.): R. W. Prescott and W. H. Burndred.

TERRITORIAL ARMY

Maj. E. R. Lovell, T.D., to be Lt.-Col. and to comd. the 164th (W. Lan.) Fd. Amb.

Capt. J. F. Wilde to be Maj.

Capt. A. N. B. Odbert relinquishes the appt. of Divl. Adjt., 46th (N. Mid.) Div.

Supernumerary for service with O.T.C.: Lt. G. N. Bailey (Empld. Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Capt.

J. B. MacKay (late Offr. Cadet, Aberdeen Univ. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Lt.

C. S. Nicol (late Cadet Lce.-Corpl., Harrow Sch. Contgt., Jun. Div., O.T.C.) to be Lt.

J. D. H. Wearing (late Cadet Sergt., Wrekin Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. W. E. Hayes, from Active List, to be Capt.

ROYAL AIR FORCE

Wing Comdr. W. E. Barnes to R.A.F. General Hospital, Hinaidi, Iraq, for duty as Medical Officer.

Squadron Leaders G. J. Hanly to Home Aircraft Depôt, Henlow, for duty as Medical Officer; L. Freeman to No. 203 (F.B.) Squadron, Basrah, for duty as Senior Medical Officer, Basrah.

Flight Lts. E. Donovan to No. 101 (B.) Squadron, Bicester; J. McGovern to R.A.F. Station, Hucknall; W. P. Stamm to Princess Mary's R.A.F. Hospital, Halton; F. W. P. Dixon, M.B.E., and T. C. Macdonald to Superintendent of the Reserve, Hendon; H. L. Willcox to Aircraft Depôt, Hinaidi, Iraq; and J. Kemp to R.A.F. General Hospital, Palestine and Transjordan, Sarafand.

Flying Offr. W. J. Fowler to R.A.F. Station, Wyton.

RESERVE OF AIR FORCE OFFICERS

Flying Offr. H. C. Smith is promoted to the rank of Flight Lieutenant.

INDIAN MEDICAL SERVICE

Maj. R. S. Aspinall, C.I.E., to be Lt.-Col.

Capt. A. N. Chopra to be Maj.

Lt. (on prob.) C. W. A. Searle to be Capt. (on prob.).

J. D. Munroe to be Lt. (on prob.).

COLONIAL MEDICAL SERVICE

Dr. H. B. A. Macfie and Dr. R. A. Porter have been appointed District Medical Officers, Cyprus. Dr. R. L. Cheverton becomes Senior Medical Officer, British Honduras; Dr. T. H. Dalrymple and Dr. H. G. Edmunds, Medical Officers, Nigeria.

DEATHS IN THE SERVICES

Colonel TERENCE JOSEPH MCGANN, I.M.S., retd., who died on Nov. 22nd, at Mysore, India, was son of Owen McGann of Whitemount, Co. Clare, Ireland, and graduated at Dublin in 1866. In the following year he joined the Indian Medical Service, became senior surgeon at Bangalore, and sanitary commissioner of Mysore in 1870. In 1895 he was appointed principal medical officer of the Rangoon district, retiring in 1901. Colonel McGann had a fine academic and public career. He became F.R.C.S. Edin. in 1881 and took the D.P.H. Camb. in 1884; before that he had been first prizeman in a number of medical subjects. His published work includes an article in the *Madras Medical Journal* on the treatment of hepatic abscess and one on stricture in our own columns (1880, ii., 728). He was for long in charge of the maternity hospital at Bangalore and superintendent of the mental and leper hospitals there. He was 95 years of age at his death.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

BY A CHRONICLER

III

THE immediate popularity of *The Lancet* was not due, as I have seen assumed by many who have commented on the early stages of the paper, to the violence of its sentiments or to the offensiveness of its personalities. These things got the paper talked about by a larger public than that in whose interests it was produced, many of whom, while aware of the wide endeavour of the policy, regarded the methods employed as deplorable. The real novelty of the paper, and the one which secured almost unwilling subscriptions, arose out of the intention to produce a journal which should stand up for the rights of the doctor in his professional position, while also supplying him with medical information. The second intention was in the beginning placed first in all appeals for hearing, and reform in medical organisation did not appear as the prime objective until the attempts by those interested personally in preventing the diffusion of knowledge became fierce.

Previous medical journals had based their claims to attention on the design to furnish scientific information, and it is not to their discredit that the performance fell short of the design to a degree that to-day seems ridiculous. For consider the editorial position. Few attempts were made a hundred and more years ago to create centres at which an interchange of medical experiences could be effected, and papers read were the property of the institutions. There were thus no sources from which communications could be requested, and papers sent in voluntarily meant more to their writers than to anyone else. The medical journals of the time made no appeal to the bulk of the profession, and their contents were largely made up of excerpts from continental organs, as we have seen. Wakley, in founding *The Lancet*, made, in his first preface, the promise that he would give a "correct description of all the important cases that may occur, whether in England or on any part of the civilised Continent." This he could not do—it was a lavish offer made on the universal model. But he also promised reports of the metropolitan hospital lectures and this he could do, and the redemption of the promise was the source of his troubles and the fount of his success. He specially addressed "country practitioners whose remoteness from the headquarters, as it were, of scientific knowledge leaves them almost without the means of ascertaining its progress," adding that he would increase the stock of useful knowledge "of every individual in these realms."

The Lancet justified the aspiration to diffuse general wisdom with no more success than had attended other medical journals in similar designs; the success of the paper was due, directly or indirectly, to the policy indicated by the promise that "to the public, and to distant practitioners as well as to students in medicine and surgery, reports of the metropolitan hospital lectures would be supplied." In that sentence lay a direct challenge to all recognised medical authority. And when the challenge was taken up, a bitter fight began. And the spirit in which the fight was conducted was not due to any particular coarseness on the part of Wakley or of his opponents—it was the spirit of a coarse age. Certainly Wakley belonged to that class of animals against whom, it may be recalled, the young were warned in an old educational manual—they were described as dangerous in that they bit when molested. Wakley, when molested, bit. But the language used at this epoch did not shock readers as it would to-day, for its counter-parts could be found in all newspapers when personal rivalries were at play.

* * *

So *The Lancet* began to report the lectures on surgery delivered to the students at a small group of metropolitan hospitals where attendance had been made compulsory by the Royal College of Surgeons of England. Round the rights of property raged the original fight between *The Lancet* and the officialdom of medicine. And personalities became bitter when the editor of *The Lancet* declared that many of those who were asserting this right to a monopoly in the instruction of medical students were not by skill or knowledge fitted for the responsibility. Accusations of robbery on the one hand and of ignorance on the other became rife, and Wakley achieved a sensational fame and a large circulation for his paper, of whose turbulent existence everybody had to know. Throughout the first ten years of its existence *The Lancet* was a duelling ground for a series of encounters between the editor and the members of the privileged classes in medicine. The lectures of leading hospital surgeons and physicians were reported in its pages to the exasperation of the lecturers, and to the delight of the profession at large and the students. The great men feared that their fees as teachers in the metropolitan schools would diminish if the cream of their teaching, provided for large classes at a capitation fee of £5 the session, could be bought by anyone for sixpence a week; while every medical man or student, unable by circumstances to attend the teaching of his leaders, rejoiced in the chance offered to him of acquiring familiarity with their methods and theories through the medium of print. So the hospital staffs were ranged in unbroken phalanx in opposition to the new and, as they considered it, mischievous print. The office-bearers of the medical corporations, whose deliveries and performances were scathingly reviewed in early issues, were not slow to scent their foe, and followed suit. Everyone who had anything to gain by the peaceful reign of existent methods in school, hospital, or corporation—in other words most of the influential members of the profession—looked with uneasiness at the growing popularity of the new journal. Wakley was denounced as a literary pirate and a disseminator of moral garbage. He replied by reflections on the complete and fretful ineptitude of his denunciators, pointed to his growing circulation, scattered nicknames, and hinted at astonishing revelations of abuses arising out of the fact that publicity had hitherto been avoided by hospital officials. As a natural pendant to his assertion that the elections to the staffs of the various metropolitan hospitals were made out of pure nepotism, accounts were given of maladministration in the schools and malpraxis in the wards. And upon these came actions and cross-actions. Certain

of the criticised were compelled to proceed legally against their critic, while their defence outside the law courts, undertaken by friends or rival journalists, on more than one occasion laid the defenders open to counter-charges of misrepresentation. In the first ten years of the existence of *The Lancet* the editor was engaged in ten actions, his opponents being eight separate persons. The proceedings in these actions constitute an interesting phase in the history of medical reform. Six of these actions were actions for libel, the aggregate sum of £8000 being claimed for damages; the aggregate sum of £155 0*s.* 0½*d.* was awarded, while the editor's costs were defrayed by public subscription. The language used on both sides of the fray was unedifying but often amusing.

* * *

Too much of the early success of *The Lancet* has been attributed to Wakley's scurrility. It is forgotten that at the time assault by unbridled language was habitual in newspapers. When an article in the *Medico-Chirurgical Review* alluded to the action of *The Lancet* in reporting the details of surgical practice as "a method of putting the operator to demoniacal torture," the reply in *The Lancet* began "prepared as we were for the imbecilities of hole-and-corner champions we were somewhat staggered at the impudent absurdity . . ." When the *London Medical Repository* said of the publication of Abernethy's lectures that "the honesty of the transaction cannot require consideration," *The Lancet* nicknamed its rival the Mausoleum and its contents were weekly held up to ridicule for their dullness and staleness. When Dr. Roderick Macleod in the *Medical and Physical Journal* reflected on Wakley he earned the title of Roderick the Goth, his organ was termed "the Gothic Absurdity" or the "Yellow Fungus" in reference to its coloured cover.

But such an interchange of compliments had not the significance that it would have to-day. At the historic Eatanswill election the local *Gazette* and *Independent*, it may be remembered, were politically opposed. Accordingly "our worthless contemporary the *Gazette*" said the *Independent*, and again, "that vile and slanderous columniator"; to which the *Gazette* replied "that disgraceful and dastardly journal, the *Independent*" and "that false and scurrilous print . . ." Pickwick was written a dozen years or so after *The Lancet* appeared and, making all allowance for the exaggerations of his riotous humour—and thanking God for them—the fact remains that Dickens started as a journalist when a boy, and knew perfectly well the truthful basis of his burlesque. Rival editors used very much the tactics of Mr. Pott and Mr. Slurk his competitor, and Wakley and his enemies were conforming to type.

Four years after the founding of *The Lancet* many of the leaders of the profession began to support *The Lancet*, as a rule surreptitiously and with strict anonymity, and the outraged officials saw that support from journals in rivalry of *The Lancet* was not valuable under the old-fashioned and pretentious pattern. Accordingly, the *Medical Gazette* made its appearance in 1827 sponsored by the classes who were being attacked. It immediately described the staff of *The Lancet* thus: "a set of literary plunderers (who) broke in on the peace and quiet of our profession"; whereupon *The Lancet*, to which in *format* the new venture had a likeness, replied "some despicable imitations of us have arisen and stunk and become extinguished . . . one or two are still emitting a little fœtor." Strong language, and we are now not in Regency days; but some ten years later than this the *Times* referred to the *Morning Post* as "this kitchen stuff journal," "this cooking out of livery." (I quote from Hatton's "Journalistic London.") So the want of manners was not peculiar to the medical press; it might manifest itself in any newspaper when a rival came up for notice, while no such improprieties marked the general contents of the papers; the *Times*, for instance, a hundred years ago, had its present high level of attitude and deliverance, and though the medical papers printed offensive personalities the bulk of their matter was written without scurrility.

* * *

What dictated the scurrility? I think that unconsciously many journalists in the early Victorian era were living up to the character given them in fiction; that they were displaying, as evidence of fearlessness and candour, the disregard for convention expected of them by public opinion, and that that public opinion was largely created by fiction. For the characters in fiction, when it is the work of an artist who draws lessons from observation and who is protected by experience from detectable errors, have immense influence in the formation of popular conceptions. How did the three great novelists of this era describe the journalist? What did they say to the public of him, and this at a later date than that of the medical ink-slinging that has been quoted? Dickens, Thackeray, and Balzac were all uncomplimentary to journalism. There may not be much opportunity to make a hero of a journalist; all these three were especially endowed for such a task, but unluckily for journalism they decided to present to the public an uncomplimentary portrait.

Dickens was a successful journalist—reporter, contributor, and editor—but so far as I can recall the only journalists among the 1500 characters or so detailed in his novels are ridiculous people, with the exception of David Copperfield, whose connexion with journalism is hardly mentioned though the character is more or less autobiographical. The writers for the press mentioned by Dickens are mainly the people whom Martin Chuzzlewit met in America: Prof. Mullit, who wrote powerful pamphlets and showed playfulness by issuing them under the pseudonym of "Suturb or Brutus reversed"; Miss Toppitt, Miss Codger, and Mrs. Hominy, "One of our chicest spirits"; and the ineffable Mr. Jefferson Brick, the war correspondent, who "struck deadly blows at the hundred heads of the Hydra of Corruption, now grovelling in the dust beneath the Lance of Freedom and spouting up to the universal arch above us its sanguinary gore." Mrs. Leo Hunter's famous poem is stated to have appeared in a magazine, but it seems to have been the only effort from her pen, so she is hardly a journalist. All these people are mere figures of fun, though excellent fun.

Thackeray, like Dickens, was for a long time a working journalist, and made his début as editor and proprietor of the *National Standard Journal of Literature Science, Music, Theatricals, and the Fine Arts*. Note the belief in the long title which, however, did not lead to a long life. Among the contributors to Thackeray's imaginary *Pall Mall Gazette*—the fictional title was adopted later in real life—we have Frederick Bayham, who sang a good song at the cider cellars; Mr. Bludyer, a critic who having "cut up a volume to his heart's content went and sold it at a bookstall and purchased a pint of

brandy with the proceeds of the volume"; and Captain Shandon, who does much of his work in the Fleet prison and is generally allowed to be a picture of the brilliant unstable Dr. William Maginn, scholar, parodist, and part author of the "Noctes Ambrosianæ." In "Stunning" Warrington we have a sympathetic portrait, but here, also, the emphasis is laid on the Bohemian characteristics. The general impression is given that the journalist is a deboshed person; and Warrington, a fine and attractive fellow, is not allowed wholly to vary from type. For he begins his morning unshorn, with a pot of beer at his elbow, and we are told that at Oxbridge he had been one of the hardest livers and readers of his time and famous for drinking milk-punch.

Balzac's picture of a Parisian journalist is a shocking one. It occurs in the "Splendeurs et Misères des Courtisanes," published in 1838, in the famous encounter in the foyer of the Opera between Lucien de Rubempré and his former journalistic colleagues. This is Balzac's summary of their literary activities:—

"Quiconque a trempé dans le journalism, on y trempe encore, est dans la nécessité cruelle de saluer les hommes qu'il méprise, de sourire à son meilleur ennemi, de pactiser avec les plus fétides bassesses, de se salir des doigts en voulant payer ses agresseurs avec leur monnaie. On s'habitue à voir faire le mal, à le laisser passer; on commence par l'approuver, on finit par le commetre. À la longue, l'âme, sans cesse maculée par de honteuses et continuelles transactions, s'amoindrit, le ressort des pensées noble se rouille, les gonds de la banalité s'usent et tournent d'eux-mêmes."

Balzac was writing deliberately a drama of social corruption, and the journalist was treated with the same ruthlessness as the man of fashion, the *grande dame*, the courtesan, and the financier. Like Dickens and Thackeray, Balzac had been a working journalist and had evidently derived a low impression of the calling and with Balzac an impression ever grew deeper and deeper as his terrible imagination drove his pen.

* * *

When medicine was treated as a subject to be noted in a sort of serial encyclopædia the attention which it received was valueless to the public and to the medical profession. But when the promotion of medicine, and the standing and circumstances of practitioners, received the undivided attention of medical journals, the wide spread of knowledge followed in a reliable form, and with it sound professional intention. And I think that the pedigree of medical journalism in connexion with medical literature, as sketched at the opening of these notes, becomes confirmed by what has followed on the establishment of medical journalism proper. It was suggested that in the records kept at the early Greek centres we had the basis for the production of systematic works; to-day the connexion between the journal and the book becomes abundantly clear. The wealth of references to the contents of serial medical publications, adduced in support of the views, lessons, and arguments to be found in all the literature of medicine—whether monograph or section within a system, shows that what happened two thousand years ago is happening to-day; first we have the records and then the literature. So, having fouled my nest by quoting the derogatory estimates of the journalist, which have been broadcast—though I am sure not felt—by eminent writers, it is with complacency that I look back on the ancient lineage and contemplate the present position.

CORRESPONDENCE

LONDON PUBLIC MEDICAL SERVICE EXTENSION

To the Editor of THE LANCET

SIR,—It is proposed on Jan. 1st, 1937, to start in London and Greater London a system of payment by contract for the medical attendance given by general practitioners to persons of family income not exceeding £550 per annum. This will be an extension of the existing London Public Medical Service, a body of general practitioners which has been providing such a service for the dependants of insured persons during the last eleven years.

The reasons for this innovation have already been given in a series of meetings and circulars. During the past few months the subject has been discussed at many meetings of B.M.A. division in London with a view of securing the approval and coöperation of the B.M.A. This has now been done as the council of that body has approved a recommendation of its Metropolitan Counties branch that it should be open for members of the B.M.A. in that area to take part in the scheme, except in such divisions as may declare that they do not want it to operate in their area.

This scheme is open to all general practitioners in London and Greater London. It is entirely under the control of the profession itself, and entrance to it can only be obtained through the doctor of the subscriber's choice. The premiums for the service to be given have been estimated after careful consideration of the income usually derived from this class of patient over a number of years.

Inquiries will gladly be answered by the undersigned.—I am, Sir, yours faithfully,

ALFRED COX,
Secretary.

17, Russell-square, W.C.1, Dec. 10th.

PROFUSELY BLEEDING PEPTIC ULCERS

To the Editor of THE LANCET

SIR,—At the risk of being tedious, might I again refer to the lessons of gastroscopy in connexion with the above subject? Surely it is time that the English-speaking medical profession realised that in the last ten years the gastric mucosa of at least twenty thousand patients as well as of experimental animals has been examined under comparatively natural conditions, in many instances repeatedly. I refer only to the publications of Gutzeit, Henning, Korbsch, and Moutier, without mentioning Schindler (who published his atlas in 1923, and who has since by the invention of the flexible instrument brought gastroscopy within the reach of the general practitioner), Elsner, Hohlweg, and many other pioneers, whose seniority gave them little time for large-scale investigations. The whole literature of hæmatemesis is so interlarded with traditional fictions, that I should be grateful if you would allow me to recall the very few facts, together with a few semi-facts and an explanatory hypothesis, which has at least the merit of being open to destruction.

Autopsy records with reliable clinical notes are regrettably scarce and in every instance those supplementary details which would render a statistical check possible are absent. I suggest and

I should be grateful for criticism on this point, that the European and North American records for the last 100 years show no change in the picture of fatal duodenal bleeding, but that there are considerable variations in the picture of fatal gastric hæmorrhage. In the duodenal cases, almost always a large chronic ulcer is found, typically invading a vessel outside the duodenum. The history is usually positive. Fatal gastric ulcer however appears to vary from generation to generation and to some extent from land to land and from hospital to hospital. While the majority of deaths are always due to large chronic ulcers eroding vessels, in a variable minority no punctured vessel can be found and sometimes not even an acute ulcer or erosion. So much for the facts; now for the semi-facts.

I can find no adequate collected surgical records on this point, but throughout those periods of surgical history when operation "in the warm" was undertaken one finds the statement reiterated: No lesion found, or else multiple bleeding points discovered. Three weeks after bleeding has stopped the radiologists have their turn. Their records must be classed as only semi-facts, because the deep penetrating ulcer of the radiologist, so far from being a large ulcer, is usually a proof that the mucous membrane is in a sufficiently healthy state to invaginate a small pathological area into a protective diverticulum. A second fallacy of radiological records is to classify a highly irritable pylorus or duodenum as evidence of ulcer, when a history of gross bleeding is present. Taking the statistics for what they are worth, about half the survivors of a hæmatemesis show "positive" evidence of ulcer. This proportion is about the same in two London hospitals with a high mortality and in Meulengracht's clinic with its rate of 1 per cent. Gastroscopical facts must also be looked upon as only semi-facts. Gastroscopy has not yet outlived the reputation, which it acquired in the early days of primitive instruments, of being dangerous. No one up to the last few years was keen to gastroscope a bleeding patient who might die anyway. Of recent years a number of examinations have nevertheless been made though publicity has been avoided. I am aware that the patients gastroscoped were to some extent a selected sample, but I still think it fair to say that a bleeding ulcer is a rarity and that some form of hæmorrhagic gastritis, in which there may or may not be an ulcer, is the rule.

Leaving facts for theory, I suggest that under the heading of hæmatemesis we are dealing with two quite different conditions. The one, chronic ulcer with eroded vessel, has an enormous mortality; few survive. The other condition is a generalised one of the mucous membrane, presenting a number of very different gastroscopical pictures, the meaning of which is still not properly understood. This second condition has a negligible mortality. The second part of my theory, in so far as it is not a corollary of the first part, is a little more dashing, and at present I do not wish to marshal my evidence in favour of it. In my opinion, clinics which have bad results are getting more patients with the first condition, clinics with good results more with the second. Niceties of treatment make little difference.

Finally, Sir, this is, as Mr. Ogilvie likes to tell his surgical colleagues, an age of debunking. Let us be honest. The consultant is no more wise to treat a case of indigestion without gastroscopy than a skin specialist to treat an itch without looking at the skin. The problem of when to operate and when not to, in ulcer and in hæmatemesis, will be nearer solution when it is realised that gastroscopy is not a bizarre exotic method of reaching a diagnosis in atypical cases, but a quick safe comfortable method of determining in what way the mucosa is reacting. In one patient the radiological niche is a callous ulcer which will need years of care before the scar is sound. In another the niche is the result of a plastic protective mechanism for a minute ulcer, the scar of which will vanish in a few weeks. A third patient is having attacks of erosive gastritis. Ulcer diet may be entirely useless; why keep on with it? When our ideas of treatment cease to revolve round slops and alkalis, the patients will abandon the chemist's shop and return to the doctor, and if the doctor makes a mucous membrane diagnosis early in his connexion with the patient, he will rarely be in doubt as to what to advise if profuse bleeding occurs.

I am, Sir, yours faithfully,

Oxford, Dec. 12th. DENYS JENNINGS.

VALLECULAR DYSPHAGIA

To the Editor of THE LANCET

SIR,—Difficulty in swallowing produced by the lodgement of food above or at the sides of the epiglottis is now frequently described as "vallecular dysphagia"; generally with the implication that the condition is something newly recognised, instead of newly christened. The following description by the late Sir Barclay Baron (Bristol Med.-Chir. Jour., 1890, viii., 82) is instructive. It must be remembered that X ray examination was not then available.

> "In some of my cases . . . the food that lodged between the tongue and the epiglottis not only gave rise to an uncomfortable sensation, but caused a terrible feeling of impending suffocation, and the patient adopted severe measures such as making himself retch, in order to get rid of it. There is no doubt that the food crowded the epiglottis down towards the top of the larynx, and prevented its normal rise in order to get air into the lungs. Also, I suppose, it set up a reflex spasm which still more tightly shut the epiglottis down. One patient, a young man, was reduced to living mainly on liquids and very soft solids, and very little even of the latter could be comfortably taken; he was very weak . . . and had lost 40 lb. in weight when I first saw him, in spite of having been admirably treated by Dr. Mackenzie. . . . Other patients have come to me complaining of fullness in the throat, something always behind the tongue that cannot be dislodged. . . ."

The condition is obviously what we are now asked to call vallecular dysphagia.

I am, Sir, yours faithfully,

Clifton, Bristol, Dec. 10th. E. WATSON-WILLIAMS.

DENTAL FOLKLORE

To the Editor of THE LANCET

SIR,—I should be glad if your readers would help me in collecting examples of dental folklore, folk cures, and customs. Under the influence of our sophisticated age, many of these are dying out and it seems a pity that what are left should not be preserved as many of them have had a direct influence on professional history.

As examples of a few which still exist there is a common belief still current in many parts of the country that worms are the causative agent in dental caries. Again charms and periapts against toothache still have a vogue. The ritual disposition of shed teeth is common. These may be burnt with salt or put into a mouse hole, both of which methods are very old and have a wide distribution. The subject of "married man's toothache" is an interesting

one as it is considered that this is a debased remnant of that strange custom of the couvade in which the father takes to his bed at the birth of his child and submits to certain taboos. There is possibly some relation between that belief and the idea which is fairly common that it is dangerous for a husband to have a tooth extracted during his wife's pregnancy.

The geographical distribution of these and other beliefs is an interesting study and it is hoped that as much information as possible either direct, from hearsay, or from early memories will be forthcoming. Nothing is too simple to be of interest and I should be extremely grateful for help.

I am, Sir, yours faithfully,

B. R. TOWNEND,
Senior Dental Officer, West Riding County Council.

Public Health Dept., County Hall, Wakefield, Dec. 9th.

ŒSTRIN AND CANCER

To the Editor of THE LANCET

SIR,—Since we have advised therapy with œstrone and its derivatives, we feel that we must accept responsibility for this action; and if Dr. Hunt is correct in her surmise, our responsibility is grave. In so far as we are aware, Dr. Hunt has no immediate practical experience in this field of research, whereas the undersigned have devoted a considerable amount of time to the subject. Dr. Hunt first refers to the work of Lacassagne. We were convinced from our study of this worker's papers that he had not succeeded in producing adenocarcinoma of the breast in other than susceptible strains. In view, however, of Dr. Hunt's statement, we communicated with Prof. Lacassagne on this point, and received the following telegraphic reply which we reproduce with his permission: "Adenocarcinoma of the breast produced by œstrone only obtainable in susceptible mice." We trust that this statement from Prof. Lacassagne will set Dr. Hunt's mind at rest.

With regard to her plea that she has been unable to find standard methods, we would quote the following techniques for determining the physiological and therapeutic responses to œstrone:—

(1) The control of such symptoms of the menopause as hot flushes, which usually require quite small doses of œstrone by mouth: 1000 to 5000 international units.

(2) Response of the human vaginal smear to œstrone in cases of ovarian deficiency.

(3) The growth of the uterus in cases of uterine hypoplasia due to ovarian deficiency.

(4) The production of œstrone withdrawal bleeding in cases of amenorrhœa.

The statement made by one of us (E. C. D.) at a meeting, that kraurosis vulvæ is regarded by some as a precancerous condition, was made on the authority of Jellett and Wilfrid Shaw who both, in their respective text-books, refer to this condition as precancerous.

In conclusion, we would point out that our object throughout is to institute a substitution therapy in order to re-establish natural function, a procedure which we beg to submit has never resulted in ill.

We are, Sir, yours faithfully,

P. M. F. BISHOP,
Department of Endocrinology, Guy's Hospital;

E. C. DODDS,
Courtauld Institute of Biochemistry, The Middlesex Hospital.

Dec. 15th.

THE THYROTOXIC HEART

To the Editor of THE LANCET

SIR,—I am much interested in Prof. John Hay's lecture published in your last issue, and especially in the section dealing with thyrotoxic hypertension, in which he refers to the paper by Parkinson and Hoyle with that title.

If this term is taken to mean simply the association of hyperthyroidism and hypertension, it is, I believe, of common occurrence since masked hyperthyroidism and high blood pressure occur in the same age-group of patients, and both are common disorders. The term should not in my view be taken to imply that the hypertension is due essentially to the thyrotoxicosis—i.e., is a thyrogenic hypertension—at any rate in the present state of our knowledge. I submit that by the unqualified term hypertension is meant a raising of both systolic and diastolic pressures, and that this is not the case in hyperthyroidism where the systolic pressure alone tends to be high and where the diastolic is either unaltered or even slightly lowered. Furthermore, it has been my experience that where hypertension (with raising of both systolic and diastolic pressures) and hyperthyroidism coexist, removal of the thyroid gland (often with complete relief of symptoms) does not alter the diastolic pressure at all, and may have very little effect on the systolic reading. In my own series of cases of masked hyperthyroidism published in 1933, there were two cases with this association; in both removal of the thyroid cleared up all the symptoms and in both it left the diastolic pressure quite unchanged and the systolic a little lower only. I have had several similar cases since.

Where undoubted hyperthyroidism exists in a hypertensive patient, I believe that the hypertension is no contra-indication to operation, but is an added factor in its favour, since by thyroidectomy at least one burden can be removed from the heart.

I am, Sir, yours faithfully,

JOHN R. H. TOWERS.

Park-square, Leeds, Dec. 15th.

MORTGAGED PRACTICES

To the Editor of THE LANCET

SIR,—Our attention has been drawn to Messrs. Lee and Martin's letter in your issue of Dec. 12th in regard to the above matter. The British Medical Association desired that its members should be able to secure practice purchase loans which should be as free as possible from restrictive conditions, and British Medical Finance Ltd. was formed with this object in view. The company has endeavoured, so far as is reasonably possible, to make such loans available to doctors without certain of the provisions which are commonly required in other schemes of a similar nature. In addition, the company had in mind the advisability of making their scheme flexible and of reducing to a minimum the gross payments which the borrower would need to make. We are confident that the plan which the company has adopted is cheaper and less onerous than others which may be available; in fact, we are receiving many letters from doctors who have for themselves confirmed these points by a careful comparison of the different facilities which have been offered to them. Your correspondents do not mention what, after all, is one of the most important facts in regard to our scheme, and that is that the B.M.F. scheme offers by far the most advantageous facilities for practice

purchase no matter what the circumstances of the particular applicant may be and whether the application is for part or the whole of the purchase price. The question is, of course, one which every doctor must decide for himself, but we invite any prospective borrower who has obtained a plain statement of the total cost under another scheme to obtain a similar statement from us and to draw his own conclusions.

Reference is made by Messrs. Lee and Martin to their relationship with a particular insurance company. We would specially like to emphasise that under our scheme the doctor can place his insurance with *any* reputable company. Our sole function is the provision of the necessary finance by means of loans and no insurance commissions of any description are paid to us.

I am, Sir, yours faithfully,

D. CARMICHAEL,
Director.

Tavistock House South, Tavistock-square, London, W.C., Dec. 15th.

GRAINS AND SCRUPLES

To the Editor of THE LANCET

SIR,—The "Grains and Scruples" in THE LANCET of Dec. 12th have certainly led your readers on a very pleasant ramble in medical history. "A Chronicler" tells us that the *Foreign Medical Review*, beginning in 1789, was the first serious representative of medical journalism, in comparison with a large number of such periodicals on the Continent at that period. The title certainly suggests the idea, still so often and so erroneously expressed, "they do things better abroad."

It is rather startling to find this familiar impression current 150 years ago. Immense developments have taken place since then, not only in all branches of medical science but in the related departments of treatment. I should not be surprised to learn that we could "give points" to our continental friends in almost any specialty, medical or surgical, not excluding countries where the healing art has been taken over by the State.

How is it that, as "A Chronicler" notes, there is still, at all events in the popular mind, something like an inferiority complex in the matter of the health resorts? Why does the old criticism still crop up wherever medical confidences are exchanged and even in British consulting-rooms? In nearly all departments of special practice—ophthalmology, orthopædics, tropical medicine, radiology, and a host of others—our best men are international figures, and, like Michael Angelo, they "can do what can be done."

Can it be, perhaps, that the science of the health resort is imperfectly appreciated in England because it is nowhere taught? In some continental countries gallant efforts have been made during the last 20 years to put the elements of what may be termed for brevity climatology into the minds of medical men, students, graduates, and post-graduates, by lectures and practical demonstrations at the spas. Similar and hopeful efforts to establish this teaching at the University of London were frustrated by the outbreak of war in 1914.

The British spas cannot have all the natural advantages which assist the therapeutic power of certain of the springs abroad. But they form a group of tonic and invigorating spas, large and small. They can do much to meet the needs of patients suffering from most of the maladies for which spa treatment is known to be efficacious. And, incidentally, those who resort to British waters save time and trouble and money and are not subjected to a change of doctor. The uncomfortable counsellor may think that not *all* is for the best. Many special methods used at continental spas are not to be found in this country. For dry inhalations and hyperthermal flowing foot-baths with their special technique, for sedative pools and the arm-bath at rising temperature (see THE LANCET, 1935, i., 984), it is necessary to go abroad.

But if it is still true that they do some things better abroad, they do some worse. It was a German physician who claimed: "You have come just in time, but by the mercy of God I will cure you," and, more recently, an Italian who when asked "What if the rheumatism should come back?" replied, "You must come to me every year for four years." And what shall we say of the enthusiastic practitioners who send the patient home to England with directions for treatment for twelve months to cover the time till their next visit?

I am, Sir, yours faithfully,

R. FORTESCUE FOX.

London, Dec. 14th

VITAMIN C AND JUVENILE RHEUMATISM

Dr. LESLIE J. HARRIS in a letter dated Dec. 12th from the Nutritional Laboratory, Cambridge, writes: "In the paper by Abbasy, Gray Hill, and myself in to-day's issue of THE LANCET, pressure on your space necessitated the omission of our detailed tables of results. Incidentally, and by an oversight, this has led to the exclusion of a piece of information which may be needed by those technically interested—namely, that the test doses referred to in Fig. 2 were given at the level of 700 mg. per day per 10 st. of body-weight."

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

VOCATIONAL TESTS FOR MEDICAL STUDENTS

AT Edinburgh as in many other medical schools a choice has to be made among the numerous aspirants to a medical career. The question has arisen whether useful assistance could not be given to the authorities by mental tests that would reveal vocational abilities. This is a question that can only be answered by trial, and some time ago, at the request of the medical faculty, Prof. James Drever, of the chair of psychology, and Prof. Godfrey Thomson, of the chair of education, undertook to test students on entry and check their findings by the same students' subsequent performance. Prof. Thomson gave a general intelligence test—Thorndike's C.A.V.D. test—which had been standardised on American students, and Prof. Drever gave an ad-hoc test which was intended to be vocational and more or less specific to those capacities which seem to be essential for success in medicine. The test could not be made compulsory, and consequently only 150 students sat for Prof. Thomson's test, and 100 for Prof. Drever's. Since the intention is to compare the performance in these tests with the success or otherwise of the students in the course, five years must elapse before it is possible to determine how far such tests can be helpful. Up to the present time only the results of the first and second professional examinations are available, and the results of the first alone have been compared with the results of the tests. Needless to say, their real value can only be assessed when the performance of the students in the really professional subjects and courses is available.

PUBLIC HEALTH

A New Hospital for South London

AT its meeting last Tuesday the London County Council decided to prepare details and estimates of cost for a new hospital to be built south of the Thames. Land is available within the precincts of St. Benedict's Hospital, Tooting, which serves the metropolitan boroughs of Wandsworth and Battersea where precisely the need is most urgent for additional beds. Year by year since 1930 the number of admissions and patient-days has steadily grown, rising (at the eight acute general hospitals south of the Thames) from 51,149 admissions and 1,964,163 patient-days five years ago to 60,600 and 2,004,752 respectively last year. On behalf of the hospitals committee Mr. Somerville Hastings remarked on the steadily increasing demand for admission to municipal hospitals in London, due, he believes, to the removal of the repressive taint of the poor-law and the policy of progressive improvement in the service. Actually, too, the length of stay of the patients in L.C.C. general hospitals is being shortened, the reduction being on the average 3·1 days (from 36 to 32·9) between 1931 and 1935. For several reasons it is impossible to keep all the beds fully occupied, and every improvement in classification is a further potential source of empty beds. The peak occupation comes in the first quarter of the year; this year there was a plateau of over 90 per cent. occupation for nine consecutive weeks. Since there rests on the L.C.C. a statutory obligation to admit every patient in need, extra beds must then be installed in wards already fully occupied—a highly unsatisfactory expedient. Infectious disease and quarantine put 2 per cent. of the total beds out of commission, and one-ninth of the beds are closed each summer for cleaning, painting, or redecorating.

The decision to build a new hospital has only been taken after other ways of relief have been tried—e.g., a new ward block of 129 beds at St. Nicholas' Hospital, 353 additional beds in new ward blocks at St. James' and Lewisham Hospitals, and the release of St. Benedict's Hospital for the chronic sick. But when all these beds have been provided it will still not be possible to carry out the standards for bed spacing in wards approved last year.

Midwives' Salaries under the New Act

Under the terms of the Midwives Act, 1936, local authorities are required to submit proposals to the Minister of Health by the end of next month. The Glamorgan health committee is understood to be offering to trained nurses with the C.M.B. diploma a salary of £150 × 10–£200, with £8 uniform allowance together with travelling expenses, an allowance of £5 a year for a telephone, and admission into the superannuation scheme. For midwives who are not trained nurses, a scale of £120 × 10–£150 with similar allowances is suggested. They will of course be provided with all necessary equipment. The suggested conditions of service include four weeks' holiday in the year, one day off a week, and one week-end a month. The average salary paid to health visitors in the Glamorgan districts is £183 per annum. These proposals are subject to consultations with midwives' representatives, welfare councils, and voluntary associations, as well as to the Minister's comment when the scheme is submitted. Miss E. M. Pye, president of the Midwives Institute, has written to the *Times* suggesting that the terms are unlikely to attract educated professional women into the new service.

Small-pox in Oldham

Four further cases of small-pox have been notified in Oldham, the last on Dec. 11th, all of them contacts of the original case. Two are neighbours, a mother aged 40, and her daughter aged 14, both unvaccinated. The other two are also neighbours, one a male aged 63, the other a female aged 54; both were last vaccinated in infancy. All the cases are progressing favourably.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 5TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 2 (Oldham); scarlet fever, 2155; diphtheria, 1541; enteric fever, 20; pneumonia (primary or influenzal), 789; puerperal fever, 35; puerperal pyrexia, 110; cerebro-spinal fever, 15; acute poliomyelitis, 12; acute polio-encephalitis, 1; encephalitis lethargica, 4; relapsing fever, 1 (Newent R.D., Glos.); dysentery, 19; ophthalmia neonatorum, 63. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 11th was 3145, which included: Scarlet fever, 1089; diphtheria, 998; measles, 10; whooping-cough, 358; puerperal fever, 13 mothers (plus 7 babies); encephalitis lethargica, 287; poliomyelitis, 4. At St. Margaret's Hospital there were 12 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 8 (0) from measles, 2 (1) from scarlet fever, 18 (2) from whooping-cough, 44 (3) from diphtheria, 45 (16) from diarrhœa and enteritis under two years, and 43 (3) from influenza. The figures in parentheses are those for London itself.

Salford reported the only death from enteric fever. Hull, Stoke-on-Trent, and Ipswich each had two deaths from measles; Bolton, Liverpool, and Sunderland each two deaths from whooping-cough. Fatal cases of diphtheria were reported from 25 great towns, Hull and Manchester each 5, Dagenham and Bradford each 3.

The number of stillbirths notified during the week was 237 (corresponding to a rate of 37 per 1000 total births), including 41 in London.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Saturday, Jan. 2nd, a demonstration on pulmonary tuberculosis will be given at the Preston Hall Sanatorium, and if sufficient entries are received it will be repeated on Saturday, Jan. 9th. On Tuesday, Jan. 5th, at 8.30 P.M., Mr. R. Lindsay Rea will give a demonstration on the fundus oculi. From Jan. 4th to 31st there will be an afternoon course (open to non-members) in dermatology at St. John's Hospital. A course of surgical tutorial classes for F.R.C.S. (Final) candidates will be given at the National Temperance Hospital on Tuesdays and Thursdays at 8.30 P.M. from Jan. 12th to March 4th. An all-day post-graduate course in advanced urology will be given at St. Peter's Hospital from Jan. 18th to 30th, and a course in cardiology (open to non-members) at the National Hospital for Diseases of the Heart from Jan. 11th to 16th. Detailed syllabuses of all courses can be obtained from the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

OBITUARY

ARTHUR LEGGE ROE, L.R.C.S. Irel.

Mr. Arthur Legge Roe was born at Haulbowline, Ireland, and received his medical education at Queen's College, Belfast, and the Royal College of Surgeons in Ireland, where he acted as demonstrator in anatomy at the medical school. He held for a time a commission in the Royal Navy, served on H.M. ships *Research* and *Northumberland*, and was for a time on the surgical staff of the Royal Naval Hospital, Plymouth. On retiring from the Service, he commenced a successful career as an ophthalmic surgeon in Hull. From 1906 to 1914 he was honorary assistant ophthalmic surgeon to the Hull Royal Infirmary, becoming full ophthalmic surgeon from the latter date until his retirement in 1932. He was widely known in the district for his operative skill, was an ex-president of the Hull Medical Society, and made practical clinical contributions to our own columns and those of the *British Medical Journal*. He was 82 years of age at the time of his death, which occurred at the home of his daughter in Southport.

KELBURNE KING GRIEVE, M.B., Ch.B. Edin.

WE regret to record the death of Dr. Kelburne Grieve, which occurred at Accra on Nov. 11th, where he was on duty as deputy-director in the Colonial Medical Service on the Gold Coast. The son of Dr. Robert Grieve, at one time surgeon-general in British Guiana, Kelburne Grieve was born in 1883, and received his medical education at Edinburgh University, where he graduated as M.B., Ch.B. in 1906. He held a resident appointment in the Royal Infirmary, Worcester, and engaged for a time in general practice, but in 1913 he joined the West African Medical Staff as medical officer in Nigeria. During 1915 he served in the Cameroons as temporary lieutenant, being wounded and mentioned in dispatches. He became senior medical officer in the Colonial Medical Service in 1927, and, on accelerated promotion, was appointed deputy-director and transferred to the Gold Coast in 1933.

Dr. Grieve married a daughter of Dr. William Bell of Wallasey, sister of the late Prof. Blair-Bell, the distinguished gynæcologist, and his death occurred with tragic suddenness. He was being partnered by his wife in a tennis tournament when he collapsed and died on the court.

Dr. King, Director of the Service, writes: "Dr. Grieve was a most able and conscientious officer with marked ability for administration. A great deal of his work during his last few years concerned African staff by whom he was held in the greatest affection and respect for his genial and kindly nature, and for the unvarying patience and fairness with which he formed his decisions."

HENRY WILLIAM SEXTON, M.R.C.S.

Dr. Henry William Sexton, whose death occurred at the beginning of the month, was the senior assistant school medical officer for West Norfolk. He was educated at the City of London School where he was a prominent athlete, received his medical training at St. Thomas's Hospital, and qualified in 1902 as M.R.C.S. Eng., L.R.C.P. Lond. He served as house physician to the hospital, and later went into practice at Rochester, where he remained in practice until, in 1920, he received his appointment at Lynn. Throughout the district he became well known for the care and energy with which he discharged his duties in the various schools, and those who came into contact with him, both professionally and privately, regret his death in middle age, which occurred almost suddenly from pneumonia.

ARTHUR GRUFFUDD OWEN M.D. Liverp.

Dr. Arthur Owen, who died on Dec. 5th, was educated at the North Wales University College, Bangor, where he followed classical studies. He later proceeded to the University of Liverpool for his medical training, and graduated in honours as M.B., Ch.B. in 1909, proceeding to the M.D. degree two years later. He was a distinguished student, gaining the gold medal in gynæcology and obstetrics and the Holt scholarship in physiology. He was appointed senior resident medical officer at the Northern Hospital, Liverpool, and then went into practice at Birkenhead. During the war period he served with the Expeditionary Force at Salonika, but at the end of hostilities returned to his practice at Birkenhead and became a prominent member of the Merseyside Welsh community. His death occurred at the age of 55 in sequence to a surgical operation.

EDWARD BACH, M.B. Lond.

THE death is announced of Dr. Edward Bach, which occurred on Nov. 27th in a nursing-home at Didcot. He received his medical training at Birmingham and University College, London, and graduated as M.B., B.S. Lond. in 1913. He was for a time demonstrator of bacteriology at University College Hospital and casualty medical officer, and at the London Temperance Hospital he was casualty house surgeon. He later became bacteriologist to the London Homœopathic Hospital, and in association with Dr. F. H. Teale published in the *Proceedings* of the Royal Society of Medicine some suggestions upon anaphylaxis, bacterial toxæmia, and allied subjects. Some three years ago he gave up bacteriological work to conduct an inquiry into practical herbalism at Sotwell, near Wallingford. He was 50 years of age.

THE LATE DR. THOMAS BERRY

Dr. Knyvett Gordon writes: "May I add a few lines to the obituary notice of Dr. Thomas Percival Berry published in your issue of Nov. 28th? As consulting pathologist to the G.W.R. Clinic I was closely associated with him for fourteen years and had a great admiration for his administrative work as chief medical officer. He always took the view that medicine and pathology were inseparable and our consultations were frequent and to me very helpful. For his transparent honesty and singleness of purpose all of his colleagues had a sincere admiration. To sit in his consulting-room and watch the faces of his patients light up as they entered was to me an education, for he was a keen and successful psychologist and never hurried or brusque. He practically died in harness."

THE LATE MR. E. S. WEYMOUTH

THE death is recorded of Mr. Edward Sprague Weymouth, head of the University Examination Postal Institution, through whose hands many

members of the medical profession passed in the course of their studies, both undergraduate and post-graduate.

We have received the following notes of his life from Mr. Martin Oldershaw: "Mr. Edward Sprague Weymouth died in St. Paul's Hospital, Endell-street, on Dec. 2nd, six days before his eightieth birthday, after a short illness. As recently as Nov. 12th he was at work as usual in his room at the medical coaching institution which he founded over fifty years ago, and which has helped so many generations of medical students and practitioners to meet their examiners with success.

"The second son of the late R. F. Weymouth, head master of Mill Hill School, he was brought up in a strict Free Church environment and throughout his life he remained of simple, almost ascetic personal habits. His work brought him into contact with men in every branch of medicine, scattered throughout the world. A morning's work might include letters from a medical missionary in China, anxious to obtain the fellowship of a college during his next leave; from the medical officer to a rubber company in Malay inquiring about the diploma in tropical medicine; and from a country doctor in the west of Ireland, wondering if he could collect material from his scattered practice for an M.D. thesis. Weeks, or months, later, the writers might call in person to talk over their problems. All received accurate information and friendly advice as to the most suitable course of action.

"I last saw him a few hours before he died, when the kindly drowsiness of a terminal uræmia was swiftly enfolding him. He knew me, and as I shook his hand in farewell, roused to ask the question he must have asked me a score of times when parting—'All well at home?' His death removes a unique and most likeable personality in the medical life of London, and he will be much missed."

PANEL AND CONTRACT PRACTICE

L.P.M.S. Extension

THE extension of the London Public Medical Service to which Dr. Alfred Cox calls attention on p. 1487, comes into operation on Jan. 1st, 1937. Its main features may be summarised thus:

WHAT THE SERVICE OFFERS

On payment in advance of the appropriate premium the subscriber is entitled, immediately after the first payment is made, to attendance at the doctor's surgery, or at home, as required, and usual medicines; also to an annual overhaul if this should be desired.

The service gives a general practitioner service, that is, the services which are rendered in the ordinary course of practice by the family doctor, and in exactly the same way.

It does not include attendance at confinements, operations requiring a general anæsthetic, operative dentistry, the administration of a general anæsthetic, vaccination, special certificates or reports, appliances (such as trusses), special examinations (X ray, bacteriological), or specially expensive drugs and dressings. All these things are extras in ordinary private practice.

HOW TO ENTER

The proposer must apply to his usual doctor, who may be a member of this service, or not. If not, he may be willing to join if he finds his patients wish to become subscribers. The entrance form and declaration of present state of health must be signed, and, after being accepted and signed by the doctor, must be sent by the proposer to the L.P.M.S. office with the first quarter's (or half-year's) subscription.

If the doctor selected is not a member of the service, and does not care to join it, the subscriber can still get certain benefits by joining it. The moneys subscribed by such persons will be placed in a pool (called the "non-coöperating practitioners' fund") from which contributions to any doctor's bills (within the scope of the service) will be paid in proportion to the claims on the pool, on production by the subscriber of a receipted bill from his doctor. If the total sum in the pool is insufficient to meet the full charges set out in this scale, the council of the service will pay the accounts subject to such percentage deductions as are necessary.

CHANGE OF DOCTOR

A subscriber can change his doctor at any time, and may transfer to any other doctor willing to accept him. No transfer can take place if the subscriptions are in arrear.

SUBSCRIPTIONS

Each subscriber is provided with a card on which the receipts for subscriptions are entered. Production of the fully paid card entitles the subscriber to the services of his own doctor, or such substitute as that doctor may provide in an emergency. The contributions of subscribers are adjusted to their income according to the following scale.

Class I.—Income between £250 and £375

No. in family.	Subscription.	No. in family.	Subscription.
1 ..	£1 10s. per annum	4 ..	£4 0s. per annum
2 ..	£2 10s. "	5 or more	£4 10s. "
3 ..	£3 10s. "		

Class II.—Income between £375 and £475

1 ..	£2 0s. per annum	4 ..	£4 10s. per annum
2 ..	£3 0s. "	5 or more	£5 0s. "
3 ..	£4 0s. "		

Class III.—Income between £475 and £550.

1 ..	£2 10s. per annum	4 ..	£5 0s. per annum
2 ..	£3 10s. "	5 or more	£5 10s. "
3 ..	£4 10s. "		

REIMBURSEMENTS

Contributions from the non-coöperating practitioners' fund are made on the basis of the following scale:—

	s.	d.
Visit and medicine for two days	5	0
Each intermediate visit in dangerous cases	3	6
Attendance at surgery and medicine for two days ..	3	6
Visit in urgent or dangerous cases between the hours of 8 P.M. and 8 A.M. (with medicine)	7	6
Attendance at surgery in urgent or dangerous cases between the hours of 8 P.M. and 8 A.M. (with medicine)	5	0

A Partnership Agreement Challenged

An insurance committee recently received a draft copy of a proposed partnership agreement between two insurance practitioners and took the view that certain clauses of the agreement did not comply with the terms of service. The clause to which the chief objection was taken runs as follows:—

"And whereas the parties hereto have agreed to carry on their respective practices in partnership, but only in so far as such practices are concerned with the attention to and treatment of persons upon the respective panels of the parties hereto for the period and upon the terms and conditions and under and subject to the provisions hereinafter contained . . . Dr. A and Dr. B will be and continue partners in the business of general medical practitioners

in so far only as such practices are concerned with the attention to and treatment of persons upon their respective panels."

This clause, the committee felt, limited the scope of the partnership to panel cases only, and therefore did not fulfil the conditions of Clause 11 (8), which requires the whole of the practice of the partners to be taken into account. Another clause to which objection was taken provided that the business of the partnership should be carried on under the style or firm of Dr. A at one surgery, of Dr. B at a second surgery, and under the joint names of the partners at such other surgery and consulting room (accessible to either) as should be agreed upon by the partners. The Ministry of Health ruled that there was no legal objection to practitioners entering into a partnership with respect to their insurance practice exclusively, and that in the case of such a partnership the word "practice" in Clause 11 (8) had reference to the insurance practice only. As regards surgery and waiting-room accommodation the committee had only to be satisfied that the arrangements proposed were reasonably adequate to secure continuity of treatment.

PARLIAMENTARY INTELLIGENCE

STANDARD OF ARMY RECRUITS

IN the House of Commons on Dec. 9th, on a motion urging the Government to take every possible step to secure the necessary voluntary recruits for the defence forces, Mr. PALMER said that when housing conditions, food, opportunities for amusement, and the use of leisure were on the up grade, it was clear that the Army must increase its standard of life to compete with the civil standard.—Mr. ANSTRUTHER-GRAY urged that the period of service should be shortened. The brigade of Guards, he said, never had any difficulty in getting recruits in spite of the fact that their height standard was 5 ft. 10 or 5 ft. 11. This was, he thought, largely due to the fact that the brigade was enlisted for only four years instead of seven, and that if they went abroad it would be only for one or two years. The War Office should undertake to frank the National Health Insurance cards on behalf of employers and employees in respect of every man who served in the Territorial Force. If the cost was £4 6s. 8*d*. per head the benefit to the employer would be equivalent to the week's wages he had to pay his man when he was training.

Sir ARNOLD WILSON said that 80 per cent. of those who joined the army came out of direct employment. It was not made easy for them when the recruiting offices were closed at 5 or 6 P.M., and men could not be medically examined after 3 or 4 P.M. There should be a single regional recruiting office for all the three services with a medical staff at each office. The present medical tests ought to be reconsidered in view of the real needs of the services. There ought not to be a uniform standard for every unit and every part of every unit. Possibly from 5 to 10 per cent. of the men in every unit must always be employed on menial duties. Why not a special medical standard for them? The majority of recent rejections had been for defective teeth; that was really a reflection on army diet—which was wholly unjustified. Army diet was not what it used to be; even in the field to-day soldiers rarely got "hard tack." The requirement in regard to teeth was out of date. He had known half a score of men rejected as recruits on health grounds who had been engaged in hard and continuous physical labour ever since with never a day's illness—men of whom any army would be proud. A few weeks ago he endeavoured to get a man into the navy. He was a fisherman, physically a magnificent specimen, and he wished to become a stoker, but he was rejected on the ground that he was colour blind. The man could distinguish ordinary colours as easily as he could, but he failed to pass a difficult test with lights which might be necessary for signallers or able seamen, but could hardly be necessary for a stoker. A number of the other tests seemed to him very drastic and not very intelligent, and he suggested a comprehensive civil inquiry into the whole working of these tests. There ought to be some elasticity in the case of a man with only one defect. The state of the barracks both abroad and at home had long been a source of criticism in reports on the health of the army; half a dozen cases had been reported officially of barracks which were positively verminous.

THE WAR SECRETARY'S REPLY

Mr. DUFF COOPER said he did not pretend that the conditions in the army to-day were satisfactory, but he hoped to be able to make them so. Since the war successive Governments had been pledged to a policy of disarmament, and it was a first necessity to present in every succeeding year diminished defence estimates. In view of the feeling not only in the House of Commons but also in the country it would have been almost impossible to justify an increase in expenditure. During the period of economy the Army Council and the Board of Admiralty naturally concentrated on the things which they thought were essential to the safety of the country, and allowed the other things which were important for the comfort of the men to go by the board. To-day, therefore, they were faced with a great and rapid advance in the re-equipment of the fighting services with the necessity of rapid and great improvement in the conditions under which the men lived. A Cabinet committee was sitting upon this question, and he hoped in the near future to be able to report how conditions might best be improved. As to the question of the medical tests, there had recently been an inquiry by the War Office, and they had arranged the men into four categories with a lower medical test for those who were not required to carry out the harder tasks. That would, he hoped, enable them to obtain many recruits who might otherwise be rejected. In the barracks now being built they were doing everything they could to improve the lighting and the general comfort.

NOTES ON CURRENT TOPICS

Protection against Gas Attack

IN the House of Lords on Dec. 3rd the Earl of HALSBURY asked what protective measures the Government were providing against an air attack on large cities by poison gas. Gas masks, he said, were of no value. We do not know what gas will be used in the next war and therefore cannot design any mask to give protection against it. He scouted the idea of making houses gas-proof; that could be no more than a palliative for a short time. Poison gas being heavier than air would go down a channel on the same principle as water will; through London poison gas would follow the channel between Hampstead and Tottenham on the north and the Surrey hills on the south. The idea that a gas attack would not carry far was false; in 1917 the gas canalised up the Suippes valley and killed men thirty miles away. When a few years ago a poison-gas factory in Hamburg blew up a north wind carried the gas up the Elbe and people were killed in the ravines of Fischbeckeheide 35 miles away. A gas attack on London would mean a wave of death right through the city, and 40 tons of gas would put the whole of London under a lethal atmosphere 30 feet high. The whole of the town would then be obliterated without hope.

The Marquis of DUFFERIN AND AVA said that while the Geneva gas protocol of 1925 abolished the use of gas in war time and while the Government hoped

that resort would never again be had to gas, the risk could not be disregarded. But much of what Lord Halsbury had said was exaggerated. The majority of houses could be made gas-proof by simple devices such as wet newspaper over the window cracks and brown paper across the fireplaces. Respirators, which were to be issued free of charge to any person who could conceivably be in danger, would provide protection against any known form of gas. The filtering material consisted of activated charcoal to absorb true gases and a pad to stop arsenical and other toxic vapours. The only difference between the Service and the civilian respirator was that the former would last rather longer. He scouted the bogy of an unknown gas passing these respirators. Their production would soon reach half a million a week and to prevent deterioration they were being kept in store until needed. A protection service by trained chemists was being organised; they would pick out the danger areas and decide in order of priority which should first be decontaminated. Police, fire brigades, first-aid parties, and other services were all getting training at the anti-gas school at Falfield, Gloucester, where the accommodation had just been doubled. It was, he said, mischievous and ridiculous to suggest that 40 tons of gas could exterminate London; it was like suggesting that a million men could be exterminated with a million bullets.

The Earl of ONSLOW also deprecated overestimating the danger, although it must not be ignored. "If you say that the whole of London will be destroyed in an afternoon, people will ask: then what is the good of trying to protect ourselves? If you ignore the danger people will not set to work to learn how to protect themselves from it." In any case there must be rehearsals beforehand; otherwise precautions would be useless. He was aware of another danger, but this was a military matter. He doubted whether the training now available for manning anti-aircraft searchlights was at all adequate.

Lord HALSBURY denied from actual experience the possibility of making a room gas-proof by putting damp newspapers over the crevices. When you are dealing with a gas whose lethal dose is 1 in 5 million you cannot, he said, afford to leave the tiniest crevice open. He had tested the respirators made with activated charcoal and had found that they did not keep out methyl arsine. In reply to Lord Dufferin's analogy, there was, he said, this difference between gas and bullets. The gas goes on by itself without hitting anybody but gradually taking victim after victim.

Lord DUFFERIN interposed that the masks are particularly good against methyl arsine. Lord HALSBURY said he would like to see the mask that was.

Turning to decontamination, Lord Halsbury said that mustard gas would hang about any sort of soil for weeks on end, no matter how you tried to get rid of it; and although it was one of the most annoying it was not one of the worst of poison gases. He added a word about the "fool idea" that a person suffering from gas ought to walk to the nearest station to get first aid; the number of phosgene cases that did that in the war and dropped dead on the doorstep was appalling. He concluded with repeating his conviction that the only protection from air attack was to do to others what they would desire to do to us, and to do it first.

National Parks

In the House of Commons on Dec. 9th Mr. MANDER urged the Ministry of Health to include in its new national health crusade the preservation of the countryside and its amenities, including the reservation of areas of natural interest against disorderly development and spoliation.—Mr. R. S. HUDSON said that the committee of 1931 had come unanimously to the conclusion that this country was not suitable for the institution of national parks such as those in the United States, Canada, or South Africa. What they had in mind could better be achieved if development was controlled and steps were taken to prevent spoliation by building. They suggested that the best means would be the granting to local authorities of much wider powers than they enjoyed under the then existing Town Planning Act. The wider powers suggested were in fact given to local authorities in the Act of 1932, and the practical question which the House had to ask itself was whether those additional powers were being made use of to achieve the purpose in view.

As regarded national reserves, planning schemes were, he said, either in operation or under active preparation for the Lake District, the Broads, and for parts of the coast lines of Lincolnshire and Pembrokeshire. A committee was on the point of being set up for Snowdonia and the Forest of Dean was actually being dealt with. As regarded the regional reserves, the High Peak district, Cannock Chase, the Forest of Bowland, and a large area of South Devon, including parts of Dartmoor, were already being dealt with. A considerable area round London had already been dealt with. Under the Town and Country Planning Act local authorities had power to include any place of natural beauty, or whose amenities required to be preserved on a scheme, and the Act applied to all areas whether they had been developed or not. Little had been done in the way of planning in Wales, but the House would realise that the need was not so urgent in Wales, because little or no development had actually taken place or was in contemplation.

In addition to the purely town planning activities of the local authorities a great deal, said Mr. Hudson, was being done in the way of extending open spaces and playing fields. The National Playing Fields Association had said that in their view a reasonable standard would be the provision of five acres of public open space per 1000 of a town's population. Fifteen of the great boroughs and corporations of England with populations exceeding 200,000, such as Birmingham, Bradford, Cardiff, Nottingham, Liverpool, and so forth, covered a total population of just about 6,000,000. They were shown at present as having open spaces under the control of their councils amounting to just over 20,000 acres. That represented about three and one third acres per 1000 of their populations. That was not perfect, but it meant that considerable strides had been made towards the figure suggested by the Playing Fields Association. Loans for the acquisition of land had been sanctioned as follows: 1927, £527,000; 1928, £707,000; 1929, £615,000; 1930, £979,000; during the period from 1931 to 1933 the figures dropped owing to financial and economic difficulties, but in 1934 they leapt up again to £961,000. Last year the amount sanctioned was over £1,000,000.

Those figures, said Mr. HUDSON, showed that local authorities during the past few years had been active in acquiring additional open spaces, and they showed the extent to which public opinion had been effective in this important aspect of the work of local authorities. In addition the National Trust owned some 60,000 acres, and there was the not unimportant item of 1,600,000 acres of commons. He hoped that the example of London, Surrey, and Middlesex, not to mention Hertfordshire, Essex, Kent, and Bucks in regard to the Green Belt would be followed by large county councils surrounding some of the more important industrial towns in the Midlands and the North. He was informed by the Southern Railway that within the last 12 months 25,000 people had left London on a Sunday to take advantage of the conducted rambling tours, quite apart from the many thousands who left on Saturdays and other days with cheap tickets.

It was hardly necessary for him to say anything about the physical advantages of open spaces. Doctors might disagree on many subjects, but they agreed that there were three fundamental advantages of open-air exercise over indoor exercise. The first was the great stimulus it gave to the "energy output" of the body. The second was the freedom from dust. The third, and probably the most important advantage in view of the increased strain of

modern life which tended to be lived more and more indoors in offices, workshops, and factories, lay in the complete and stimulating change of taking exercise out of doors which was bound to have a first-class psychological effect. He did not think they could over-emphasise the effect on the health of the people of being able to give them plenty of opportunities for exercise in the open air.

The Manufacture of Insulin

On Dec. 15th, in the House of Commons, Lieut.-Colonel COLVILLE, Financial Secretary to the Treasury, moved two resolutions imposing new customs duties on imports of foreign beef and veal. He explained that it was proposed to exempt sweetbreads from duty under the resolutions. There was an important reason behind that. A considerable part of our imports of sweetbreads were used as the raw material for the manufacture of insulin. Insulin was imported free of duty, and it was desired that that exemption should also extend to the raw material for the manufacture of insulin in this country. As insulin was at present imported free, it would be appropriate that the raw material should come in without duty.

The first resolution was carried by 205 votes to 123 and the second by 213 votes to 123.

QUESTION TIME

WEDNESDAY, DEC. 9TH

Scottish Pensioner and a Hearing Aid

Mr. STEPHEN asked the Minister of Pensions if he was aware that Mr. Alexander Bouik, late 989, Scottish Rifles, 315,148, Royal Army Medical Corps, was refused electrical hearing aid from the Ministry while resident in Glasgow; that such treatment was granted to him when later he was resident in the London area, but that on returning to Glasgow he was informed by the local area officer that it was not permissible to renew the aid-to-hearing appliance supplied to him in April, 1934; that he was receiving a smaller disability pension than similar cases in the southern area; and whether he would set up a committee of inquiry to ensure that more uniform treatment was afforded to pensioners throughout the country.—Mr. H. RAMSBOTHAM replied: There is no difference in the Ministry's practice as between one part of the Kingdom and another. Mr. Bouik is in receipt of pension of 30 per cent. which is in fact the average rate of pension for his disablement. With regard to the particular complaint, the facts are that no electrical instrument suited to Mr. Bouik's case was available in 1920 when his defective hearing was originally attended to in Glasgow. The first application for such an instrument was only made by him in 1934, when he was duly supplied with one. A new instrument, which the pensioner had requested, to replace one so recently supplied as in his case, is not issued if the existing one is susceptible of repair, and following his further representations the present appliance was called up for examination a week ago and the necessary repairs put in hand.

National Health Propaganda

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Health whether he had considered the scheme submitted to him for a national campaign of health propaganda to be financed by insurance companies and approved societies; and whether he had arrived at any decision on the matter.—Mr. HUDSON, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend is aware that such a suggestion has been made, but no proposals for a national campaign have been made to him by insurance companies or approved societies. The general question of health propaganda is now receiving the consideration of my right hon. friend.

THURSDAY, DEC. 10TH

Unemployment Relief Scales and Nutrition

Miss RATHBONE asked the Minister of Labour whether the scale of assistance laid down in the regulations of the Unemployment Assistance Board had taken into account the cost of a minimum diet necessary for health, as estimated by the nutrition committee of the British Medical Association or by any other scientific authority and the cost of other primary needs; and, if not, upon what other considerations the scale had been fixed.—Mr. ERNEST BROWN replied: I am satisfied that in drafting the regulations which have recently come into force with the approval of this House the Unemployment Assistance Board had regard to the considerations referred to by the hon. Member.

Miss RATHBONE: Is the right hon. gentleman aware that the actual determination falls short of minimum subsistence needs as estimated whether by the British Medical Association or by other authorities by amounts which became more and more substantial according to the number in the family and in what sense, therefore, have these estimates been considered?

Mr. BROWN: I must have notice of that question.

Mr. G. GRIFFITHS: Is the right hon. gentleman aware that the Secretary for War has decided to change the diet in the Army and will he change the diet out of the Army?

Milk in Schools Scheme

Mr. W. ROBERTS asked the President of the Board of Education whether any children in schools were being supplied with preserved instead of fresh milk.—Mr. OLIVER STANLEY replied: It is estimated that about 5 per cent. of the children receiving milk in the schools are supplied with preserved milk in some form or another. Preserved milk is not provided under the milk-in-schools scheme.

Mr. ROBERTS: In view of the fact that some types of preserved milk have a much lower food value than fresh milk, will the Minister draw the attention of the local authorities concerned to that fact?

Mr. STANLEY: In the great majority of the cases in which preserved milk is supplied it is as the result of a voluntary arrangement carried on by the teachers. In the few cases where it is supplied by local authorities the Board try actively to discourage them, provided that there are supplies of fresh milk available.

Maternal Mortality

Mr. LUNN asked the Minister of Health what action, in addition to the Midwives Act, is being undertaken by his department to reduce the large percentage of maternal mortality in the country.—Sir KINGSLEY WOOD replied: I would refer the hon. Member to the annual report for 1935 of the Chief Medical Officer of my Department recently published, which contains in the section relating to maternity and child welfare a summary of the action taken by my Department both by way of investigation into this problem and by way of administrative action for the improvement of maternity services. Further measures it may be desirable to take will be reviewed when I have before me the report now in course of preparation of the special investigations recently made into maternal mortality in various parts of the country.

Mr. LUNN: Will copies of that document be available for members of this House?

Sir KINGSLEY WOOD: Yes, Sir; I shall make them available.

TUESDAY, DEC. 15TH

French Polishers and Dermatitis

Mr. GRAHAM WHITE asked the Home Secretary if the inquiry in the prevalence of dermatitis among french polishers had been completed and whether any action was contemplated.—Mr. GEOFFREY LLOYD, Under-Secretary, Home Office, replied: Yes, Sir. The results confirmed the view that french polishing is one of the occupations specially liable to give rise to dermatitis and that the most practical remedy is increased education of the workers in care of the skin.

Condemned and Overcrowded Houses in Edinburgh

Mr. GUY asked the Secretary of State for Scotland the number of condemned houses in Edinburgh still occupied and the number of houses found to be overcrowded by the survey under the Housing (Scotland) Act, 1935.—Mr. ELLIOT replied: At Nov. 30th the number of occupied houses to be demolished or closed under orders made by the corporation was 715. It is estimated that there are approximately 6000 unfit houses in the city which have not yet been made the subject of official representations.

MEDICAL NEWS

Royal College of Surgeons of England

A meeting of the council was held on Dec. 10th with Sir Cuthbert Wallace, the president, in the chair. Mr. R. Davies-Colley (Guy's) and Mr. G. T. Mullally (Westminster) were elected and admitted as members of the court of examiners, and Mr. H. F. Humphreys (Birmingham) was elected a member of the board of examiners in dental surgery.

The Hallett prize, granted on the result of the primary examination for the fellowship in November last, was awarded to Robert Evan Owen Williams (University College).

The council adopted the following as the reply to the resolution passed at the recent annual meeting of fellows and members :—

"That the council, having carefully considered and discussed the report of the proceedings at the annual meeting of fellows and members on Nov. 19th, 1936, can see no reason for reopening the question of altering the constitution of the College. The main function of the College is to promote the study and practice of surgery. If there are any matters in this connexion to which members of the College wish to draw attention, an opportunity for so doing is afforded at the annual meeting of fellows and members, while the council will at all times welcome and give careful consideration to representations made to it by any member or body of members of the College in reference to matters which come within the functions of the College."

The council accepted the offer of Lord Moynihan to present to the College a bust of his father and his collection of instruments. The council also accepted a gift of historic anæsthetic apparatus from Dr. R. J. Probyn-Williams.

Diplomas of fellowship were granted to the following candidates :—

Elaine M. K. Salmond, M.D. Lond., Gladys Hill, M.D. Lond., Herman Treissman, M.B. Lond., D. C. McC. Ettles, M.B. Lond., C. C. Cookson, M.B. Birm., N. E. Pitt, M.B. Lond., A. L. Pereira, M.B. Lond., A. N. Birkett, M.B. Manch., Malcolm Baillie, M.B. Lond., I. G. Williams, M.B. Lond., John Howkins, M.B. Lond., F. R. Kilpatrick, M.B. Lond., T. F. R. Griffin, M.B. Lond., H. B. Lee, M.B. Lond., L. Z. Cosin, L.R.C.P. Lond., G. C. D. Roberts, L.R.C.P. Lond., D. O. Davies, M.B. Lond., S. K. Ghosh, M.B. Patna, C. J. B. Murray, M.B. Lond., W. G. Q. Mills, M.B. Camb., A. S. Till, M.B. Camb., S. G. Clayton, M.B. Lond., E. O'D. C. Grattan, L.R.C.P. Lond., John Hughes, L.R.C.P. Lond., J. H. Kellgren, M.B. Lond., G. B. Davis, L.R.C.P. Lond., T. M. Williams, B.M. Oxon., H. K. Doctor, M.B. Bombay, R. L. Mehra, M.B. Punjab, S. O. Aylett, M.B. Lond., John Charnley, M.B. Manch., P. W. Clarkson, L.R.C.P. Lond., D. N. Matthews, M.B. Camb., J. F. Heslop, M.B. Manch., D. W. Ashcroft, M.B. N.Z., N. J. Bonnin, M.B. Adelaide, H. L. Cochrane, M.B. Belf., W. B. Dickson, M.B. Toronto, Alford Dornan, M.B. Belf., A. S. Gray, M.B. N.Z., N. M. Harry, M.B. Melb., W. G. Johnston, M.D. Toronto, F. R. Leonard, M.B. N.Z., C. P. V. Menon, M.B. Madras, Thomas Moore, M.B. Durh., W. A. B. Nicholson, M.B. Manch., K. I. Nissen, M.B. N.Z., D. P. O'Brien, M.B. N.Z., L. J. T. Pellew, M.B. Adelaide, L. M. Snaith, M.B. Durh., J. A. Stallworthy, M.B. N.Z., B. W. Stevens, M.D. Toronto, and O. G. Tunks, M.B. Sydney.

A diploma of membership was granted to Irene Katherine Hezlet, of University College Hospital.

Licences in dental surgery were granted to the following candidates :—

R. G. Archer, H. M. D. Archibald, R. J. Belcher, Marion J. Blennerhassett, B. F. Boyd-Cooper, P. M. Calder, D. F. Denniss, M. C. Dutt, E. H. Fletcher, Herman Frank, A. J. Freese, A. S. Ghosh, W. G. Godfrey, S. W. Guilding, E. W. Harradine, P. S. Hovell, D. C. Howe, J. C. O. Hurst, R. J. M. Inge, Olive I. James, P. S. P. Jenkins, F. K. Johnson, A. W. Keith, Joan L. Labern, Dennison Laverick, H. J. Lewis, T. J. M. Lowry, A. B. MacGregor, Irene Michael, Dorothy J. Millar, H. P. Moolgavkar, F. R. Pickard, H. D. A. Pocock, P. D. Priest, J. C. Prosser-French, G. J. F. Rees, T. D. H. Ridsdale, J. C. Robertson, J. L. Rossini, J. A. Smith, W. A. Smith, W. G. Smith, E. L. Sutton, H. L. Thomas, E. A. Thompson, Eric Townend, David Tudor-Williams, P. C. Webb, F. H. S. Weiss, C. R. L. West, J. W. Williams, G. H. Wilson, C. G. Wright, and William Wylde.

Diplomas in anæsthetics were granted jointly with the Royal College of Physicians to the following candidates :—

R. H. Blazeby, C. H. Catlin, George Edwards, Eva M. Gray, Elizabeth M. Handfield-Jones, T. A. B. Harris, T. H. Hobbes, G. H. W. Keates, Rosalind M. P. Milne, Joyce Morgan, L. O. Mountford, A. H. Pirie, J. W. Redgate, J. E. C. Rouse, H. B. C. Sandiford, R. L. Soper, Edith J. Thompson, F. A. H. Wilkinson, and R. F. Woolmer.

Royal College of Physicians of Edinburgh

At a meeting of the College held on Dec. 3rd Dr. W. T. Ritchie was re-elected president, and the following were elected to the council for the ensuing year : Dr. Edwin Bramwell, Dr. Alexander Goodall, Dr. J. D. Comrie, Prof. Charles McNeil, Dr. Fergus Hewat, and Dr. D. M. Lyon. Dr. Goodall was nominated vice-president.

University of London

At recent examinations the following candidates were successful :—

THIRD EXAMINATION FOR M.B., B.S.

D. L. H. Goddard, St. Thomas's Hosp.; J. S. Horn, Univ. Coll. Hosp.; S. A. Jenkins, Univ. Coll., Cardiff; Simon Marinker, Middlesex Hosp.; J. W. Pierce, St. Thomas's Hosp.; G. R. Royston, St. Bart.'s Hosp.; Eric Samuel, Middlesex Hosp.; and J. E. Spalding, Guy's Hosp. (with honours); G. P. Arden, Univ. Coll. Hosp.; Minnie Atkin and Sivasithamparam Balasingam, King's Coll. Hosp.; B. J. Bickford, St. Bart.'s Hosp.; Beatrice A. Blake, Roy. Free Hosp.; Reginald Bolton, Univ. Coll. Hosp.; L. C. Bousfield, Middlesex Hosp.; H. V. Brown, Guy's Hosp.; I. S. Buchanan, Westminster Hosp.; G. D. Channell, Guy's Hosp.; R. F. Clarke and F. E. Corea, St. Bart.'s Hosp.; Hilla Damry, Roy. Free Hosp.; C. S. Darke and D. A. Davies, Guy's Hosp.; D. J. Davies, Univ. Coll., Cardiff, and Univ. Coll. Hosp.; D. R. Davies, Univ. Coll., Cardiff; A. M. Desmond, London Hosp.; C. W. Dixon, King's Coll. Hosp.; R. B. Evans, London Hosp.; W. J. M. Evans, Univ. Coll., Cardiff; J. D. O. Fearnley, St. Bart.'s Hosp.; Margaret A. B. Fleming, Roy. Free Hosp.; K. D. Fraser, Univ. Coll. Hosp.; J. E. Furness, St. Thomas's Hosp.; R. E. Gibson and T. N. Grundy, St. Bart.'s Hosp.; W. H. Hamilton and J. A. J. Hammond, Guy's Hosp.; Gladys I. Jeffree, King's Coll. Hosp.; Joyce B. Jewson and Helen M. Kennedy, Roy. Free Hosp.; G. A. Kiloh, King's Coll. Hosp.; Marjorie F. Landau, Roy. Free Hosp.; S. W. Lane, St. Mary's Hosp.; L. R. Leask, St. Bart.'s Hosp.; Manuel Lederman, Westminster Hosp.; V. N. Leyshon, Charing Cross Hosp.; J. P. McGladdery, St. Bart.'s Hosp.; D. H. G. MacQuaide, St. Thomas's Hosp.; Alison J. McNairn, Roy. Free Hosp.; Morris Markowe, Charing Cross Hosp.; J. H. Mayer and J. A. W. Miller, Guy's Hosp.; Robina M. D. Morrell, Roy. Free Hosp.; Ananda Nimalasuria, King's Coll. Hosp.; Peggy C. Permain, Roy. Free Hosp.; J. H. Playne, St. Mary's Hosp.; S. W. Pratt, Univ. Coll. Hosp.; Ernest Price, St. Mary's Hosp.; E. P. Rigby and J. L. D. Roberts, St. Bart.'s Hosp.; Kathleen M. Robinson, Roy. Free Hosp.; E. ap I. Rosser, K. G. Rotter, and D. M. Samuel, St. Bart.'s Hosp.; J. K. Samuel, St. Thomas's Hosp.; D. A. Sanford, Univ. Coll. Hosp.; Olive M. Singer, Roy. Free Hosp.; E. H. J. Smyth, St. Bart.'s Hosp.; G. T. Stockings, King's Coll. Hosp.; S. F. Thomas, London Hosp.; Catherine M. Whitestone, Univ. Coll. Hosp.; J. R. Wilson, King's Coll. Hosp.; Eluned Woodford-Williams, Univ. Coll. Hosp.; G. N. Wright, Guy's Hosp.; P. J. M. Wright, St. Thomas's Hosp.; and Ruth E. Young, Univ. Coll. Hosp.

The following candidates have passed in one of the two groups of subjects :—

Group I.—H. I. C. Balfour, Beryl E. Barsby, Irene B. Black, Jane Bonnell, C. M. Bowker, J. A. G. Carmichael, D. A. Davies, R. D. L. Davies, G. S. W. de Saram, Margaret R. Dix, Gwenda M. Francis, Max Hamilton, Leon Henig, Denise O. Henry, F. G. Hollands, S. F. Jayawardene, Ursula J. Jeffery, Constance A. Mallett, Winifred F. G. Murray, J. E. R. Palmer, D. E. Parry, A. N. Roy, L. J. Sandell, Sheila G. Snook, R. W. Taylor, R. N. E. Watt, J. C. Watts, Joan M. Wenn, and F. H. Yates.

Group II.—J. C. Baillie, Gwendolen K. G. Coote, E. C. Dax, M. P. Embrey, D. R. Hanbury, T. H. Hills, Islwyn Hywel Davies, Mabel E. Linscott, D. de la C. MacCarthy, Mary D. Mellersh, A. G. Moore, F. T. Moore, O. N. Ransford, Ethel M. Strong, R. J. C. Sutton, Nest Thomas, P. H. Tooley, and A. M. Williams.

University of Sheffield

Mr. J. L. A. Grout has been appointed to the newly created post of honorary lecturer in radiological anatomy; Dr. George Clark to the post of junior assistant bacteriologist; and Dr. W. A. Timperley to a research fellowship in the department of physiology.

Prof. T. Talmage Read has been appointed external examiner in dental subjects.

University of Aberdeen

Work has been begun on the new medical school which is being built at Foresterhill adjoining the new Royal Infirmary. It is estimated that the total cost will be about £100,000, and provision is being made for departments of chemistry, bacteriology, pathology, medicine, surgery, midwifery, and materia medica. Sites will also be available for departments of physiology and anatomy which may be erected later. Each professor will not have his own classroom as at present, but there will be two lecture rooms, a large museum, and library common to all departments.

Medico-Legal Society

The annual dinner of the Society took place at the Trocadero Restaurant, Piccadilly, on Wednesday, Dec. 9th, under the presidency of Mr. C. Ainsworth Mitchell, D.Sc., the large company including Lord Dawson, Sir William Bragg, O.M., Sir John Parsons (president, Royal Society of Medicine), Sir Holman Gregory, K.C. (Recorder of London), Air Vice-Marshal Sir Philip Game, The Hon. Mr. Justice Porter, Judge Earengey, and Sir Alexander Maxwell.

Sir Holman Gregory, proposing the toast "Medicine and Law," said that verily those two professions could not do without each other, they had so many things in common. If asked what was the outstanding feature of the practitioners of those two callings he would reply "their code of honour." He had spent fifty years in association with the administration of criminal law, and he craved the assistance of both professions especially in one direction. His experience had been that 98 per cent. of the prisoners who came before the courts on serious charges were, in one sense, not responsible for what they did. The remaining 2 per cent. were brainy expert criminals, sworn enemies of society, and those should be rigorously punished. The 98 per cent. needed to have their position and mentality probed medically, to ascertain what was behind their unlawful activity. If he was able he hoped to bring the subject before the Society. In the present circumstances it was very difficult for these men, on discharge from prison, to make a fresh start. If the young offender could be better dealt with it would amount to a revolution in administration. He coupled with the toast the names of Sir John Parsons and Mr. Justice Porter.

Sir John Parsons, F.R.S., in responding, said that both medicine and law were characterised by extreme conservatism, and the movements of the law were very slow. The Colleges of Physicians and Surgeons were perhaps the most conservative bodies in England. Sometimes medicine tended to show a progressive movement, as in the recent promotion of a Bill in the Lords, but, thanks to the lawyers, it probably would not become law, and doctors would still be allowed to kill their patients in the old way. Aristotle was right when he said that law was invented in order that we might live a good life, and that was the aim of both medicine and law. Mr. Justice Porter said the distinguishing attribute of judges was their desire to be relevant, and while the law always took the view that very strict proof must be given of lunacy before a man could be excused in regard to a crime, the medical profession did not always take so strict a view, but sought some ground of irresponsibility. The judge's function was to see that order was kept in the State, and if that meant the sacrifice of the life of a man here and there, such sacrifice must be made. But, though in other respects the doctor was also a citizen, with him the particular person was a patient primarily. The lawyer, he contended, had one final standard of truth.

Proposing "The Medico-Legal Society," Air Vice-Marshal Sir Philip Game said that both law and medicine as such could do without the police, but the police could not do without them. He hoped the police laboratory at Hendon and the fruition of the scheme for establishing a medico-legal institute would prove a further step in the police becoming junior partner in the alliance between medicine and the law. The President, replying to the toast, spoke of the strictness of the relations governing the contact of the two professions with each other, and quoted the malicious remark of Samuel Butler in reference to the experience of some expert witnesses: "A day in thy Courts is better than a thousand." He spoke of the great success of the Society's journal, and the increasing support of it from outside the Society.

Judge Earengey, proposing "The Guests," said he hoped that when the medico-legal institute was established it would provide for the legal side in its organisation, as well as for the doctors. He was sure many would offer their help in furtherance of such an admirable scheme.

Sir Alexander Maxwell, responding to the toast, made reference to the proposed medico-legal institute and said that in connexion with a similar institution in a European capital it was stated that the institute had ample material for autopsies and for all sorts of pathological studies, because the Government placed at its disposal the corpses of all prisoners and civil servants. In this country he had been astonished at the way in which medical officers, of prisons especially, had learned to understand and appreciate the legal attitude of mind. But many medical practitioners in this country did not share that sympathy for the legal profession. He agreed with Judge Holman Gregory that the medical point of view with regard to offenders was often extremely important, and frequently differed from that of the lawyer. Many juries did not know the facts which were relevant in the case, and so were at a disadvantage in deciding what was the best to be done with the offender. At criminal trials he was often greatly impressed by the skill, learning, and patience of the scientists and doctors who gave expert evidence.

Exhibition of British Architecture

The private view of the Royal Academy Exhibition of British Architecture (mentioned in an annotation in our issue of Nov. 28th) will be held on Friday, Jan. 8th, 1937, and the exhibition will be open to the public on the Monday following.

Neurological Research Fellowship

The Sir Halley Stewart Trust has placed at the disposal of the Medical Research Council a sum of £500 per year for three years for a senior fellowship tenable in the neurological research unit at the National Hospital for Nervous Diseases, Queen-square, London. The fellowship has been awarded to Dr. Joseph Doupe.

Clarke Hall Lecture

The third Clarke Hall lecture will be delivered on Wednesday, Jan. 27th, at 4 P.M., in the hall of Gray's Inn, London, W.C., by Mr. S. W. Harris, assistant Under-Secretary of State, on probation and other social work of the courts. Sir Herbert Samuel will be the chair.

Federation of the Health Resorts of France

The Federation announces the impending fourteenth Voyage Medical International, the tour being on the Riviera. The tour will take place from Dec. 26th to Jan. 2nd, under the presidency of Prof. Laignel-Lavastine, of the Paris faculty of medicine. All medical men and their families are invited to join at the inclusive price of 1000 francs, and a reduction of 50 per cent. on the French railways. For full information application should be made to the Federation, Tavistock House (North), Tavistock-square, W.C.1.

Epsom College

The fifty-ninth annual meeting of the Old Epsomian Club on Dec. 10th was followed by the dinner at the Café Royal, London. Dr. S. Duke Turner (O.E. 1885) presided and the company included, besides the members of the club, representatives of the present generation at the College, and distinguished guests. After the loyal toasts, Dr. Allan Parsons (O.E. 1884), proposing the health of the chairman, told several tales, some tender, the majority gay, of their comradeship in arms at school in the 'eighties, in hospital, and the subsequent appointments in courtship, in the volunteer movement, and finally, during some forty years of medical work in different spheres. Many of these reminiscences were supplemented by the chairman in his response. Dr. Turner deplored the conspicuous lack of the younger old boys at the dinner, and offered to invite a score of these next year. The head master, the Rev. Arnold Powell, responding to the toast Floreat Epsomia, extolled the sympathy that had created Dr. Turner's generosity, for he was sure it was chiefly economy that prevented those beginning their careers from attending such functions. He paid a tribute to Sir Raymond Crawfurd, who had retired that year from the chairmanship of the College council. Sir Raymond had contributed, he said, more than any individual to the enhanced reputation of the school; in his position as head master he had seen daily the results of this work. He went on to welcome his successor, Dr. Henry Robinson, who had already shown evidence of a keen interest in all the school's activities. Mr. J. Norman Eggar (O.E. 1902) proposed The Guests, and Sir Maurice Cassidy and Dr. Robinson responded.

THE Académie de Médecine has unanimously promoted Sir StClair Thomson, already a foreign correspondent, to be a foreign associate. The number of the latter is limited to twenty, and amongst them there is not at present any other representative of otolaryngology. The other British associates of the Académie are Sir Thomas Barlow, Sir Charles Sherrington, and Sir Almroth Wright.

Guy's Hospital

The trustees of the Bernhard Baron fund have offered £10,000 to this hospital for the reconstruction of its dispensary, on the condition that this department is named after Mr. Baron.

Society for Constructive Birth Control

On Wednesday, Jan. 6th, at 2.30 P.M., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher. Application for tickets from medical practitioners and senior students should be made to the hon. secretary of the society, 108, Whitfield-street, London, W.1.

Mary Putnam Jacobi Fellowship

The Women's Medical Association of the City of New York offers this fellowship of $1000 to a woman graduate of an approved medical school for one year for post-graduate work in the medical sciences. Preference will be given to candidates who intend to spend the year in the United States. Applications should reach Dr. Annie S. Daniel, chairman of the fellowship committee, New York Infirmary, 321, East 15th-street, New York, before April 1st.

Frances Wood Memorial Prize

The council of the Royal Statistical Society offer this prize of the value of £30 in 1937 for the best investigation, on statistical lines, of any problem affecting the economic or social conditions of the people. Competitors will choose their own subjects, but it is believed that original observation or analysis made in the course of their ordinary work or special research will afford material for papers. Further information may be had from the hon. secretaries of the Society, 4, Portugal-street, London, W.C.2, to whom papers should be submitted before Oct. 31st.

Imperial Cancer Research Fund

The general committee of this fund held its annual meeting in London on Tuesday last, when Lord Halifax was elected president in succession to the Duke of Bedford. Sir Basil Mayhew, who presided, announced that a lease has been taken of 8 acres of land from the Medical Research Council at Mill Hill, and that a modern research station will be built there at a cost of £30,000 including equipment. (A drawing of the proposed building is reproduced on p. 1483, where the annual report of the director, Dr. W. E. Gye, is reviewed.) The sum of £19,000 had yet to be raised for the purpose.

On retiring from the presidency the Duke of Bedford sent a donation of £1000. Prof. H. R. Dean. Prof. H. W. Florey, and Prof. C. A. Lovatt Evans, F.R.S., were elected members of the general and executive committees.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.6.

MONDAY, Dec. 21st.—10 A.M., skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, and gynæcological clinics.

TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics.

WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics.

THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations, medical, surgical, genito-urinary, and eye clinics.

Appointments

BEATTIE, J. H. M., M.D. Lond., F.R.C.S. Eng., M.C.O.G., has been appointed Hon. Gynæcologist to the West End Hospital for Nervous Diseases.

BELL, A. DOYNE, B.M. Oxon., M.R.C.P. Lond., Hon. Assistant Physician to take charge of the Children's Department at Queen Mary's Hospital for the East End.

BIRDSALL, S. E., B.Chir. Camb., F.R.C.S. Eng., Hon. Surgeon to the Ear, Nose, and Throat Department, Paddington Green Children's Hospital.

CAIRD, A. J., M.B., F.R.C.S. Edin., Hon. Surgeon to the Cumberland Infirmary, Carlisle.

COOKE, R. T., M.D. Edin., Assistant Pathologist at the Royal Infirmary, Preston.

DAVIES, D. O., M.B. Lond., F.R.C.S. Eng., Surgical Registrar at the Hospital for Sick Children, Great Ormond-street.

DUCKWORTH, GEOFFREY, M.R.C.P. Lond., Hon. Physician-Dermatologist to the Bolingbroke Hospital, Wandsworth Common.

EVANS, ROBERT, M.D. Belf., F.R.C.S. Edin., D.L.O., First Assistant to the Ear and Throat Department of the Children's Hospital, Birmingham.

FEGGETTER, G. Y., M.S. Durh., F.R.C.S. Eng., Hon. Surgical Registrar to All Saints' Hospital, London.

FORRESTER-WOOD, W. R., M.B. Camb., F.R.C.S. Eng., Assistant Hon. Surgeon to the Haywards Heath Hospital.

FRANKLIN, A. WHITE, M.B. Camb., M.R.C.P. Lond., Hon. Physician to Out-patients at the Paddington Green Children's Hospital.

GIBSON, M. J., M.B., F.R.C.S. Edin., Acting Visiting Honorary Surgeon to the Ear, Nose, and Throat Department of the Perth Royal Infirmary.

JEAFFRESON, B. L., M.D. Lond., F.R.C.S. Eng., M.C.O.G., Consultant Obstetrician for Halifax.

KERR, A. L., M.B. Liverp., F.R.C.S. Eng., Hon. Surgeon to the Sutton and Cheam Hospital.

LAURENT, L. P. E., M.D., M.R.C.P. Lond., Diagnostic Physician to the Institute of Medical Psychology.

LEEDHAM-GREEN, J. C., B.M. Oxon., F.R.C.S. Eng., Resident Surgical Officer at the General Hospital, Birmingham.

MCCREA, A. N., M.B. Camb., Resident Surgical Officer at St. John's Hospital, Lewisham.

MOODIE, A. R., M.D. St. And., F.R.C.S. Edin., Acting Visiting Honorary Surgeon to the Ophthalmic Department of the Perth Royal Infirmary.

NEVIN, S., M.D. Belf., M.R.C.P. Lond., Medical Registrar at the Willesden General Hospital.

• PATTERSON, W. G., M.D. Edin., M.R.C.P. Lond., D.P.H., Deputy County Medical Officer for Surrey.

RANKINE, J. E., M.B. Glasg., D.P.H., Assistant Medical Officer of Health for Lincolnshire (Kesteven).

ST. JOHNSTON, C. R., M.B. Birm., Resident Medical Officer at the General Hospital, Birmingham.

WIGODER, LIONEL, M.B., M.Dent.Sc. Dub., Hon. Dental Surgeon to the East Ham Memorial Hospital.

WYNTER, TASMIN M., M.D. Lond., D.A., Resident Anæsthetic Registrar at the Hospital for Sick Children, Great Ormond-street.

Hospital for Epilepsy and Paralysis, Maida Vale.—The following appointments are announced:—

MARTIN, PHILIPPA, M.S. Lond., F.R.C.S. Eng., Ophthalmic Surgeon;

WINNER, ALLERLINE L., M.D., M.R.C.P. Lond., Medical Registrar; and

FAIRWEATHER, D. S., M.B. Edin., M.R.C.P. Lond., Medical Registrar.

Middlesex Hospital.—The following appointments are announced:—

BEAUMONT, G. E., D.M. Oxon., F.R.C.P. Lond., Physician;

MARRIOTT, H. L., M.D., M.R.C.P. Lond., Assistant Physician;

MURRAY, C. J. B., M.B. Lond., F.R.C.S. Eng., Surgical Registrar;

BARBER, W. C., M.B. Camb., F.R.C.S. Eng., Surgical Registrar;

HOWKINS, JOHN, M.B. Lond., F.R.C.S. Eng., Obstetric and Gynæcological Registrar;

RABAN, J. P., M.R.C.S. Eng., D.M.R.E., First Officer to the Department of Radiotherapy; and

WILLIAMS, I. G., M.B. Lond., D.M.R.E., Second Officer to the Department of Radiotherapy.

Queen Charlotte's Maternity Hospital, London.—The following appointments are announced:—

CAPLE, H. H., M.B. Toronto, D.P.H., Senior Resident Medical Officer;

BEATON, DONALD, M.B. Edin., Assistant Resident Medical Officer;

MARTIN, C. J., B.Chir. Camb., Resident Anæsthetist and District Resident Medical Officer; and

MILNE, ROSALIND M. P., M.B. Aberd., Resident Anæsthetist.

Westminster Hospital.—The following appointments are announced:—

MACNAB, G. H., M.B. Edin., F.R.C.S. Eng., Surgical Registrar;

RUNDLE, FRANCIS, M.B. Sydney, F.R.C.S. Eng., Surgical Registrar;

D'ABREU, FRANK, Ch.M. Birm., F.R.C.S. Eng., Surgical Registrar; and

MULLALLY, G. T., M.S. Lond., F.R.C.S. Eng., Hon. Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: Dr. J. J. COULTHARD (Edenbridge District, Kent); Dr. H. C. BOURKE (Allendale District, Northumberland); and Dr. D. H. LE GOOD (Lavenham District, Suffolk).

• Subject to confirmation.

NOTES, COMMENTS, AND ABSTRACTS

THE PHILOSOPHER AND THE SOCIETY MOTHER

ONE of the minor misfortunes of a classical education in this country is that, during the years one is learning to read Greek and Latin, there is an agreement among teachers to confine their pupil's studies to the writers of the Golden Age of Athens and Rome. It is probably not altogether an unwise provision, yet it tends to remove the scenes and actors of whom we read to a sort of mythical atmosphere and we forget that, at least in Athens and Rome, and probably in other big cities like Alexandria, all classes lived much the same sort of life, had much the same sort of pleasures, and discussed much the same sort of literary, historical, or social questions as form the background of our own city lives. One of the advantages of our escape from tutelage is that the writers of the Silver Age are no longer under a ban, and a little reading in their pages puts the Roman world again on a human footing; we are no longer moving in a fairyland, but back in a world which was exceedingly busy with everyday matters.

Aulus Gellius wrote in the second century A.D. in the reign of the Emperor Antoninus Pius, and though often credulous and tedious, does give us pictures of the ordinary life at Rome, which enforce the lesson that times may change, but men—and women—do not. The following is a free but faithful translation of his account of a morning spent with his teacher Favorinus, and we could almost imagine that it was Boswell reporting a diatribe of Dr. Johnson's.

A MORNING WITH FAVORINUS

"I was with Favorinus when a message was brought to him that the wife of one of his pupils had just been brought to bed and delivered of a son. 'Let us go and see the infant,' said Favorinus, 'and congratulate his father.' The father was of a noble family of senatorial rank. All of us followed him and went in with him. In the hall he embraced and congratulated the father and then took a seat. And when he had inquired how long the labour had lasted and whether it had been difficult, and had been told that the lady, worn out with fatigue and want of sleep, was dozing, he began to talk freely and said: 'I suppose that she will nurse her son herself?' But the lady's mother answered that her daughter must be spared that trouble, and that wet-nurses were to be provided for the infant. 'Madam,' said Favorinus, 'I implore you to let her be the mother of her son in full perfection. For surely it is a strange imperfect and half-motherhood to bear a son and at once to reject him: to have nourished with her own blood in her womb something which she could not see, and then to deny her own milk to that which she now has before her eyes, a live human being, crying out for his mother's care. Or are you one of those who suppose that Nature gave women nipples as a sort of beauty-spots, not for the end that they may suckle their children, but as embellishments to their bosoms? For though of course you will not admit it, there are a lot of unnatural women who try to dry up and check that holy fountain of the body, the nourisher of mankind, regardless of the danger of turning and spoiling the milk, because they consider that it mars their bodily beauty. But in so doing they are guilty of the same mad folly as those who by hook or crook try to secure abortion of the fœtus which they have conceived, in order that there may be no wrinkle on the smooth surface of their bellies, and from fear that they may lose their figures by the burden of the child and the strain of labour.

"'Now as it is an act of universal reprobation to go about to murder a human being at its very inception, while it is being moulded, endowed with life, and is still in the hands of Nature, the great artist, how little is the difference when you rob the child, now fully formed and born into the world, of the nourishment of the blood of its nearest and dearest relative. But, it is said, provided that the child is fed and kept alive, it makes no difference by whose milk that end is secured. Then why do not those who make this assertion, if they are really deaf to the call of Nature, also contend that it makes no difference in whose body and from whose blood a child is born and fashioned. Is not the marvellous cunning of Nature discernible also in this that as soon as the craftsman, the blood, has fashioned in its holiest precincts the body of a man, when the time of delivery is at hand, it rises to the breasts above, ready to cherish the first beginnings of light and life, and to supply the new arrival with his wonted familiar food? Well may we believe then that just as the property and nature of the seed have power to produce likenesses in body and mind, so a similar effect may be ascribed to the quality and virtue of the milk. We see it in animals as well as in human beings for if kids are suckled by a ewe, or lambs by a goat, the lambs' wool is coarser, and the goats' hair finer than usual. In trees and wheat also the power and qualities of the water and soil have more effect in delaying or promoting their growth than have those of the seed; and you may often see a vigorous blooming tree, transplanted to another place, die from the effect of the less fertile soil.

"'What the mischief then is the sense of spoiling the body and mind of the new-born man, built up from the most promising beginnings, by the alien and inferior milk of a hireling? especially if she whom you procure is a slave or of menial origin, and as is very often the case, a barbarian and foreigner? if she is dishonest, ugly, unchaste, or given to drink? for generally any woman who has milk at the moment is employed without much enquiry. So this boy of ours, are we to let him be infected with some dangerous contagion, or to draw a spirit into his mind and body from a body and mind of perhaps the worst type? Why, good Heavens, that must be the reason for the fact which often surprises us that the child of a perfectly respectable mother turns out utterly unlike his parents either in body or mind. Our Roman Vergil when he imitated Homer's lines

> The brave knight Peleus never was thy sire,
> Nor Thetis was thy dam: but the gray sea
> And flinty rocks: so pitiless is thy soul.

was wise and witty enough not to base the charge on birth alone, but to add that some wild and savage mother was his nurse;

> The iron cliffs of frowning Caucasus
> Fathered thee: and some tigress of Hyrcania
> Gave thee her dugs;

for there is no doubt that in the formation of character the disposition of the nurse and the quality of her milk play an important part: for the milk though imbued in the beginning with the essence of the father's seed moulds the new-born character from the mother's physical and mental attributes.

"'Again who will neglect or despise the consideration that those who abandon their offspring, banish them from their side, and give them to others to nurse, sever or at least impair and loosen that bond and cement of mind and affection by which Nature unites parent and child. For if an infant is given to another's care and removed from its mother, the strength of maternal passion gradually and insensibly fades, every call of impatient anxiety is silenced, and a child which has had another's care and nursing is almost as completely forgotten as if it had been lost by death. And the child's own feelings of affection, fondness and intimacy are centred wholly in her who has nursed him, and therefore just as in the case of foundlings, he has no feeling for the mother who bore him, nor any sense of something lacking. And so, when the foundations of natural affection are

uprooted, the children thus brought up, however much they may seem to love their parents, yet that love is generally not instinctive, but merely the outcome of training and convention.'

"All this I heard Favorinus deliver in the Greek tongue, and I have reproduced his sentiments as well as I could recall them, for the advantage of my readers: but the elegance, the richness, and the fertility of his language could hardly be conveyed by the whole power of Latin eloquence, and scarcely at all by my feeble efforts."

HOSPITAL LIBRARIES

SOMEWHAT unhappily the description of hospital libraries has been given to the arrangements devoted exclusively to the provision of books for patients. King's College Hospital recently provided a corrective to this point of view by organising a meeting when the visitors had an opportunity to view the three libraries within its walls. The library from which the books are distributed to the patients was described by Mr. A. D. Power as chairman of the committee engaged in collecting books and enlisting voluntary assistants to deliver them regularly to the patients. A carefully designed trolley to enable the patients to view a wide selection of books while recumbent in bed attracted special attention. The account given by the Sister Tutor, Miss K. F. Armstrong, dealt with the books provided for the nurses for their studies and the library containing fiction under their own management. She claimed that the former is the best reference library of medical books for nurses in any hospital in the country. Their appreciation of the committee's generosity is demonstrated by the remarkable fact that while the average circulation of books of fiction is 30 a month, more than four times that number are taken out of the professional library. It was, however, the library handsomely housed in the medical school which specially aroused the interest of the visitors. Dr. A. Gilpin explained the respective values of medical text-books and medical periodicals to the student before qualification and for post-graduate work. An interesting collection of ancient treatises mainly received through bequests showed that medical history can be studied in a library established in comparatively modern times. Even in a hospital which has not a medical school, the scope of a hospital library can hardly be confined to the collection of books provided for the patients. The alliance which is being established in several parts of the country between the public library service and the hospital is one which might be extended for the benefit of the medical men and nurses. There is an increasing desire on the part of the public library to assist the serious student. Manchester, for example, has an admirable system of providing for the busy man, who cannot spare the time to go to the library, by delivering the book to him. In that category surely no one has a better claim to inclusion than the medical man and the nurses anxious to extend their knowledge.

YEAR-BOOK OF LEARNED SOCIETIES

FOR the fifty-third year in succession Messrs. Charles Griffin and Co. have now compiled from official sources a Year-book of the Scientific and Learned Societies of Great Britain and Ireland (pp. 170, 10*s*.). It is arranged under 14 sections, of which the last (and one of the longest) is Medicine, and the first General Science, starting off, as is right and proper, with the Royal Society and the Royal Institution of Great Britain. In between are sections of astronomy, geography, biology, agriculture, law, literature, archæology, and others. To the humanist there is much of interest in the variety of purposes for which people meet; it may be to study the early history of East Anglia or the protection of ancient buildings in London, for the study of monumental brasses, or the exploration of Palestine. In Liverpool people meet about gypsy lore, in Clifton they read Shakespeare, at the Chetham College, Manchester, they study parish registers, in Baillie's library, Glasgow, they talk about bibliography; and many of the societies are associated with the names of persons, some better remembered than others—Faraday, Harvey, Hakluyt, Charles Lamb, Samuel Johnson, Selden, Chetham, Dugdale, Ray, Quekett, Gilbert White, Brontë, Buchan, and many others. All are essentially of a learned character, only commercial undertakings being ruled out, and additions are always being made. This issue also contains a record of publications issued during the session 1935–36.

A TRIBUTE TO SIR PERCY SARGENT

THE late Sir Percy Sargent had many friends and admirers to whom this early and graceful address to him in Latin verse should prove of interest. The elegiacs were written on Sargent's 21st birthday, in his Cambridge days, by Mr. L. G. H. Horton-Smith, his deeply attached friend, who has at our request composed the English translation which is appended.

The belated appearance of the verses is due to the fact that Mr. Horton-Smith has only recently been looking over a collection of the scholarly and elegant verses that he was in the habit of making on topical occasions, when he found amongst them two sets of verses dedicated to Sargent of which the shorter is the one here reproduced.

AD SODALEM ILLUM UNICUM
(PERCY W. G. SARGENT)
Annos iam natum unum et viginti
Natali scripti die
Versiculi

O puer, exaudi! Labentibus ocior horis
Vita imprudenti deperitura fugit.
Prætextatus adhuc—hodie, puerilia ponens,
Liberior puram sumis aduite togam;
Verna dies ablit, pennisque sequacibus ætas
Proterit invadens æmula veris iter;
Æstatem, mora nulla, rapax auctumnus adurget,
Auctumnum refugum frigida bruma premit.
Immeritone queror? Quid enim? Sors una senectam
Una iuventutem—pœnituisse—manet!
Dum brevis hora sinit, discas instare labori;
Venturo nequeas credere. "Carpe diem."

Idem Anglicè Redditum

VERSELETS TO HIS BOSOM-FRIEND
(PERCY W. G. SARGENT)
Upon his Coming-of-Age
The 8th day of May
1894

Give ear, my boy! No hours that pass abide:
Beyond our heed, life all too swift flies on;
A youth,—to-day you lay your youth aside,
And free, as man, now man's estate you don.

See! Spring has fled, and on pursuing wing
Speeds envious Summer, soon itself to yield
To Autumn's greed and later heralding
Of Winter's turn its own chill sway to wield.

Lament! Why not? For, youth and age alike,
Each lives but tribute of "Regret" to pay!
To work, then, now! ere Time's last hour may strike
Tomorrow's too untrusty. Snatch To-day.

THE C.S.M.M.G. DIRECTORY.—We are informed that the statement in our last issue that the new directory of the Chartered Society of Massage and Medical Gymnastics costs 4*s*. does not apply to members of the medical profession, who may obtain it free of charge.

BRADSHAW LECTURE: CORRIGENDUM.—In Mr. Hugh Lett's lecture on Renal Tuberculosis, published in our issue of Dec. 5th, there is a mistake on p. 1313. In the second column, three lines from the bottom, the figure 11·5 should be 7·5. The sentences thus read: "Pus in a sterile urine is recognised as being very suggestive of renal tuberculosis. It may occur, however, in 7·5 per cent. of cases of urinary calculus, excepting prostatic calculi, and also in some cases of long-standing chronic prostatitis."

WHITAKER'S ALMANACK FOR 1937

THERE are a number of new features in the Almanack for 1937 which now contains 1064 pages. These additions deal with the results of recent censuses in Ireland and the Dominions, with overcrowding in England and Wales, with the progress of television, with various inventions which have come to light during the year, and last, but unfortunately not least, with precautions against air-raids. A library edition is to contain 13 coloured maps. But the value of Whitaker to the medical man does not reside in these interesting frills but in the fact that he can find in the volume the right information on anything he wants to know about, and he can find it in a moment by means of an index which now contains more than 100 pages. Whitaker is an essential desk companion and few practitioners can safely be without it. A supplement regarding the constitutional change and its results is available free of charge for insertion in copies which have already been issued. The price as usual is 6*s.*; abridged edition in paper cover 3*s.*

Messrs. LETTS have sent us several of their Quikref diaries for 1937. The "Shaftesbury" (2*s.* 6*d.* to 3*s.* 6*d.*) weighs just over an ounce, the thickness is only that of two half-crowns, and the cover is flexible making it an ideal diary for professional men. The "Public Speakers" (2*s.* 6*d.* to 3*s.* 6*d.*) covers 18 months so that appointments can be noted up to the end of June, 1938. The "Calendiary" (6*s.* 6*d.*) foolscap cloth, a week in opening, interleaved with blotting paper, has a perpetual calendar on the cover, the date being changed with the touch of the finger. The whole series is practical and attractive.

Vacancies

For further information refer to the advertisement columns

Aberdeen University.—Lecturer in Department of Medicine, £400–£575.
Battersea General Hosp., Battersea Park, S.W.—H.P. and H.S., at rate of £130 and £120 respectively. Also Cas. O. for Out-patients' Dept., at rate of £50.
Bedfordshire County Council.—Asst. County M.O.H., &c., £800.
Bexley U.D.C.—Asst. M.O.H., £550.
Birmingham City.—Asst. M.O.H., £600.
Bristol, Southmead Municipal General Hosp.—Jun. Asst. Res. M.O., at rate of £200.
Bristol University, Preventive Medicine Dept.—Laboratories Asst. Clin. Pathologist, £375.
Cardiff City Mental Hosp., Whitchurch.—Med. Supt., £1000.
Cardiff, Welsh National School of Medicine.—Part-time Lecturer in Anæsthetics, at rate of £525.
Central London Throat, Nose, and Ear Hosp., Gray's Inn-road, W.C.—Hon. Assts. for Out-patient Dept.
Chelsea Hosp. for Women, Arthur-street, S.W.—Anæsthetist, £21.
Cheshire, Cleaver Sanatorium for Children, Heswall.—Res. Asst. M.O., £300.
Chesterfield and North Derbyshire Royal Hosp.—H.S., at rate of £150.
City of London Hosp. for Diseases of the Heart and Lungs, Victoria Park, E.—Two Hon. Asst. Anæsthetists.
Connaught Hosp., Walthamstow, E.—Sen. Res. M.O., at rate of £150. Also H.P. and H.S., each at rate of £100.
Doncaster Royal Infirmary and Dispensary.—Res. Anæsthetist, at rate of £175.
East Ham Memorial Hosp., Shrewsbury-road, E.—Res. M.O., at rate of £200.
Gloucestershire Royal Infirmary.—H.S., at rate of £150.
Godalming, County Sanatorium, Milford.—Jun. Asst. Res. M.O., at rate of £350.
Guildford, Royal Surrey County Hosp.—H.S., at rate of £150.
Harefield, County Sanatorium.—Physician, £650.
Herefordshire General Hosp.—H.P., £100.
Hosp. of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. and Surg. Reg., each at rate of £100.
India Government Medical Research Dept.—Gazetted Posts, Rs. 625. Also Gazetted Post, Rs. 250, &c., per annum.
London County Council.—Two Radiologists, each £900. Part-time Radiologists, at rate of £125. Temporary Visiting M.O., £200. Also Part-time M.O.'s, at rate of £255 and £40.
London Homœopathic Hosp., Great Ormond-street, W.C.—Surgeon in Charge of Orthopædic and Mechano-Therapy Dept. Also Pathologist and Bacteriologist, £350.
London University.—University Chair of Pathology, £2000.
Manchester, Christie Hosp. and Holt Radium Institute, Withington.—Hon. Neurological, Urological, and Plastic Surgeons.
Manchester, Royal Children's Hosp.—Res. M.O. and Res. H.S., at rate of £150 and £100 respectively.
Manchester Royal Infirmary.—Hon. Dental Surgeon. Also Hon. Prosthetic Dental Surgeon.
Manchester Victoria Memorial Jewish Hosp., Cheetham.—Sen. H.S. and H.P., £250 and £180 respectively. Also Jun. H.S., at rate of £125.
Marie Curie Hosp., 2, Fitzjohn's-avenue, N.W.—Res. M.O., £100.
Market Drayton, Cheshire Joint Sanatorium.—Res. M.O., £250.
Middlesbrough, North Riding Infirmary.—Third H.S., at rate of £125.
Middlesex County Council.—Physician for County Sanatorium, Harefield, £650. Two Jun. Res. Asst. M.O.'s, each at rate of £250. Also Radiologist, £3 3*s.* per session.
Newcastle General Hosp.—H.S. and H.P., each at rate of £150.
Northampton General Hosp.—Hon. Asst. Physician. Also H.S. to Ear, Nose, and Throat Dept., at rate of £150.
Oldham, Boundary Park Municipal Hosp.—Res. Asst. M.O., at rate of £200.
Oldham Royal Infirmary.—H.S. and H.P. to Special Depts., each at rate of £175.
Prince of Wales's General Hosp., N.—Jun. H.S., £90.
Putney Hosp., Lower Common, S.W.—Hon. Ophth. Surgeon.
Reading, Royal Berkshire Hosp.—Two H.S.'s, each at rate of £125.
Rotherham County Borough.—Asst. M.O., £300.
Royal College of Surgeons of England.—Examiner in Pathology.
Royal Free Hosp., Gray's Inn-road, W.C.—Res. Cas. O., at rate of £150.
Royal London Ophthalmic Hosp., City-road, E.C.—Two Out-patient Officers, each £100.
Royal Masonic Hosp., Ravenscourt Park, W.—Res. Surg. O., at rate of £250.
St. George's Hosp., S.W.—Res. Obstet. Asst., £100.
Salford City.—Asst. Clin. Tuber. O., £500.
Sheffield, Jessop Hosp. for Women.—Asst. Bacteriologist and Pathologist, £300.
Southampton Free Eye Hosp.—H.S., £150.
Southampton, Royal South Hants and Southampton Hosp.—Hon. Clin. Asst. to Dermatological Dept.
South London Hosp. for Women, Clapham Common, S.W.—Asst. Gynæcological Surgeon. Also Clin. Asst. for Surg. Out-patients.
Stoke-on-Trent, Longton Hosp.—H.S., £160.
Tottenham Borough.—M.O.H., £1200.
West Bromwich, Hallam Hosp.—H.P., at rate of £200.
Westminster Hosp., Broad Sanctuary, S.W.—Surgeon.
Willesden General Hosp., Harlesden-road, N.W.—Hon. Ophth. Surgeon.
York County Hosp.—H.P., £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at East Kilbride (Lanark).

Births, Marriages, and Deaths

BIRTHS

HALL-SMITH.—On Dec. 11th, at Bournemouth, the wife of Dr. G. W. Hall-Smith, of a son.

HERN.—On Dec. 10th, the wife of Dr. J. R. B. Hern, of Devonshire-place, W., of a son.

MARRIAGES

EMMERSON—WILLIAMS.—On Dec. 10th, at the Chapel of the Savoy, Guy Emmerson, M.B., M.R.C.P., to Gwen, elder daughter of Dr. and Mrs. T. J. Williams, of Liverpool.

GOLDSWORTHY—KING.—On Dec. 4th, at Plymouth, Surg. Lt. (D.) F. J. Goldsworthy, R.N., to Anne, younger daughter of Mrs. Frederick King, of Plymouth.

GRAY—GANNAWAY.—On Dec. 8th, at St. James's Church, Spanish-place, Edward Emile Delisle Gray, M.D., M.R.C.P., to Lilian Maud, daughter of Charles Henry Gannaway and the late Mrs. Gannaway.

METCALFE—HILL.—On Dec. 12th, Richard Hood Metcalfe, M.D., F.R.C.S., to Isobel Russell Hill, M.B., only daughter of the late Rev. and Mrs. Hill, of Glasgow.

DEATHS

ASPINALL.—At Aughton, Lancashire, John Aspinall, M.R.C.S. Eng.

BUNCOMBE.—On Dec. 12th, at Walberswick, Suffolk, William Dewey Buncombe, M.R.C.S. Eng., late of the City of London Infirmary, Temp. Lt.-Col., R.A.M.C., in his 73rd year.

CLAPHAM.—On Dec. 11th, at Woodside Hospital, Capt. John Thurlow Clapham, M.R.C.S. Eng., R.A.M.C. (retd.), aged 70.

LORD.—On Dec. 8th, at Orpington, Kent, Cyril Courtenay Lord, M.R.C.S. Eng., in his 65th year.

MCGANN.—On Nov. 22nd, at Mysore, India, Col. Terence Joseph McGann, I.M.S. (retd.), in his 95th year.

MITCHELL.—On Dec. 10th, at Queen's-road, S.E., Charles Mitchell, M.B., C.M. Aberd.

WHITBY.—On Dec. 8th, Frank Whitby, M.B. Durh., of New Romney, Kent.

*N.B.—A fee of 7*s.* 6*d.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*